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Intake RS MI

Research & Consulting in Pollution Control

1800 N. GRAND RIVER AVE., LANSING, MICHIGAN 48905 — (517) 482-1151

Project No. 129

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316(a) and (b) STUDIES
ON THE
GRAND RIVER

FINAL REPORT

Submitted to:

The Lansing Board of Water and Light
Lansing, Michigan

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1.0 SUMMARY

The Erickson, Eckert, and Ottawa Street Steam Electric Generating Stations, owned and operated by the Lansing Board of Water and Light, use water from the Grand River at Lansing as a steam condenser coolant, and discharge the water, at an elevated temperature, back into the river. A year-long study (September, 1975 - August, 1976) was conducted to determine if thermal discharges to the Grand River are creating an environment not conductive for the maintenance of a balanced aquatic community. In addition, a year-long (September, 1975 - August, 1976) field monitoring study was conducted to determine the environmental impact of loss through impingement of organisms on cooling water intake screens, and of entrainment in the cooling water.

The Erickson Station, a base-load facility, began operation in late 1973. During this study period (September, 1975 - August, 1976), it averaged 142 MW, 89 percent of capacity. The station utilizes closed-cycle cooling (cooling towers) and withdrew an average of 0.6 percent of the river flow. Discharge to the river was limited to cooling tower blowdown and represented an average of 0.11 percent of river flow with a heat rise of usually less than 5 F° (intake to discharge).

The Eckert Station, a base load facility, began operation in 1922. From 1972-76 the station has generated an average of 104 MW (26 percent of capacity). From 1972-73 (pre-Erickson), the mean generation was 41 percent; 1974 averaged 23 percent. During the study, the average was 27 percent. The once-through condenser cooling system used an average one-third of river flow during the study period. Virtually all of the condenser discharge can be recirculated to above the station, and through summer-only cooling towers.

The Ottawa Street Station, a peaking facility, began operation in 1939. The station operates primarily to supply steam heat to downtown Lansing buildings only during the winter months (December - May). The station operated during this study at an average 20 percent (18.3 MW) capacity from December through May, and used an average of 2.7 percent of the river flow as a coolant.

All three stations use chlorine as a condenser anti-foulant. The Erickson discharge contains generally less than 0.05 ppm total residual chlorine; no data is available for the study period for concentrations from Eckert or Ottawa. The Eckert and Ottawa Street Stations did not chlorinate during the study.



Dissolved oxygen readings during the study indicated that oxygen depletion or super-saturation was not occurring in the study area.

Phytoplankton and zooplankton population surveys in control and thermally-enriched areas showed a dominance by diatoms and green algae, and by rotifers, respectively. No shifts in abundance or diversity between areas could be attributed to entrainment in the cooling water or to thermal enrichment.

Periphyton populations, as measured by glass-slide artificial substrates, were overwhelmingly dominated by diatoms. An analysis of abundance and diversity with respect to temperature and light showed no trends. However, abundance appeared higher in swift-current areas. No changes between control and thermally-enriched zones could be attributed to heated water.

Very few macrophytes were found in the study area. The paucity of higher aquatic plants could be due to the turbid water and lack of suitable habitats. No enhancement or depletion could be noted with respect to temperature.

Macroinvertebrate populations were sampled in control and thermally-enriched areas by Ponar dredge (to measure the naturally occurring benthic populations) and by Hester-Dendy artificial substrates (to measure water quality and suitability for habitation by drift macroinvertebrates). The survey was conducted in the spring and summer during less-than-maximum thermal enrichment to the river. Hester-Dendy samples were strongly dominated by dipteran (primarily chironomids) insect larvae and pupae, but Ponar samples were strongly oligochaete-chironomid dominated... No trend was noted with respect to sediment size distribution in the benthos, and no trend could be detected in abundance and diversity of organism populations with respect to temperature. The results of this study largely agree with two previous studies (Willson, no date; Willson, 1973a) in that a general increase in "pollution tolerant" forms was observed from upstream of Lansing to downstream of the Moore's Park Dam. The shift was attributed to generally degraded water quality as the river passes through the Lansing area.

Fish populations upstream and downstream of the Eckert and Ottawa Street Stations were surveyed throughout the study by electrofishing, gill netting, and frame netting. Seining was attempted and discontinued. In general, a diverse and abundant population, dominated by centrarchids and cyprinids, was found. The study largely agreed with a previous fish survey (Bryant and Harvey, 1973). That study surveyed the entire river and found a relatively diverse and abundant population between the Moore's Park Dam and the confluence with the Red Cedar River. For the study reported here, a seasonal trend in abundance between zones was noted. In the winter and spring, more fish were collected in areas showing the greatest heat rise over ambient (i.e. - at



the discharge points), but in the summer, fish were more evenly distributed. No trends in the general health or condition of fish were noted with respect to temperature. Diversity of the population (number of species) did not appear related to temperature but did appear related to habitat diversity.

Temperatures observed at the fishing zones during the survey did not exceed known upper lethal limits for representative important species, and were generally in a range conducive to spawning.

A screen impingement monitor conducted at the Erickson Station indicated minor and insignificant impingement problems at that station's intake. Seven fish are estimated to have been impinged during the study. A few crayfish were the only other organisms found in the screen backwash.

Estimated total impingement during the study period at the Eckert Station was 2,151 fish representing about 24 kg. Eighty-eight percent of the fish were <8 cm long. Thirty-two species were collected, of which bluegill, spottail shiner, and bluntnose minnows were the most common. The station withdrew water, on the average, at 37 percent of its maximum possible intake volume. Crayfish, frogs, and turtles were found impinged in low numbers. Of 551 other organisms estimated to have been impinged, 529 were crayfish.

No trends were noted between impingement rates and the amount of intake warming from recirculation at the Eckert Station. Fish attraction to the intake was thought to occur as a consequence of warm-water recirculation. However, the data did not indicate that trend. Monthly data, however, indicate a trend toward higher impingement during colder months and during increased river flow.

At the Ottawa Street Station, it is estimated that 379 fish, representing approximately 2 kg, were impinged during the December - May operating period. Of the 17 species collected, bluegills represented 56 percent, while bluntnose minnows comprised 17 percent of total. A total of 153 other organisms including clams, turtles, and crayfish, were also estimated to have been impinged.

Impingement rates at the Ottawa Street Station followed no strong trends with respect to plant operating and river flow conditions. It appears that greater impingement occurred during the colder months, but since the station operated for only six months, the data are inconclusive.



Generally, the species composition of impinged fish resembled the composition of the river population at both the Eckert and Ottawa Street Stations. As indicated by the fish population survey, the river supports an abundant population, and it is likely that the level of loss through impingement (as observed during this study) could be sustained by the river fishery.

Larval fish and fish egg entrainment in cooling water was monitored initially by towing nets in the area directly in front of the intake structure at each station (September - December, 1975). Pumps were used from January through August, 1976. Larvae were first collected in April at all three stations, and were observed in samples through mid-August. Larvae were collected in greatest abundance during June, 1976, and eggs were collected at all three stations only in that month.

Results of the entrainment monitor indicated that a majority of the larval fish and fish eggs entrained were cyprinids, primarily carp and blunt-nose minnows. It is estimated that the Erickson Station entrained fewer (22,951 larvae; 3,139 eggs) than Eckert or Ottawa, but samples showed a higher number per cubic meter of water at that station. The present entrainment loss at Erickson is most likely being sustained by the fishery but increases in intake volume may create losses which would deplete the local fish population. However, the lack of data pertaining to the fish population in that area precludes an objective assessment of the loss.

Approximately one-half million larvae and one-quarter million eggs are estimated to have been entrained at the Eckert Station. That level of loss, however, is calculated to represent a fraction of the spawning potential of the river population, and little impact on the river fishery is probable.

It is estimated that thirty-seven thousand larvae and 381 eggs would have been entrained if the Ottawa Street Station had been operating at normal levels throughout the spawning season. Since the plant shut down in May, 1976, for the summer, it is estimated that 1,340 larvae and no eggs were actually entrained. If the station were to shut down before the peak spawning season (mid-May to late June as observed during this study), the loss to the fishery would be virtually zero.

From this study, the influence of thermal effluents, impingement, and entrainment on the river ecosystem by the Erickson, Eckert, and Ottawa Street Stations appears minimal. The thermal effluent study indicated no shifts in abundance or diversity of phytoplankton, periphyton, zooplankton, macrophyte, or macroinvertebrate populations that could be directly related to thermal effluents. Because fish congregate in warm water during winter, a potential for thermal shock exists at both the Eckert and Ottawa Street Stations. An operating mode which would assure steady-state discharge from October through March could largely eliminate that hazard. In general, the river fish population is abundant and diverse in the vicinity of the two plants and does not appear to be significantly altered by the warm-water effluent.

Impingement and entrainment losses do not appear to be of sufficient magnitude to diminish the river populations and are probably sustainable through increased recruitment. No changes in operational procedures that



would mitigate or minimize impingement or entrainment losses are suggested by the trends observed during this study. It is apparent that the populations have successfully accommodated the entrainment and impingement losses and have established an equilibrium which is allowing for an abundant and diverse assemblage.



APPENDIX E

<u>TABLE NO.</u>		<u>PAGE</u>
E-1	Phytoplankton, September 11, 1975	1E
E-2	Phytoplankton, February 13, 1976	2E
E-3	Phytoplankton, May 13, 1976	3E
E-4	Phytoplankton, June 15, 1976	4E
E-5	Periphyton, April 20 - May 20, 1976	5E
E-6	Periphyton, May 21 - June 23, 1976	8E
E-7	Periphyton, May 21 - August 18, 1976	11E

TABLE E-1

Phytoplankton numbers (in thousands) per liter for each duplicate sample collected on September 11, 1975, at five zones in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1		ZONE 3		ZONE 5		ZONE 7		ZONE 9	
	1	2	1	2	1	2	1	2	1	2
TOTAL COUNT ORG/LITER IN THOUSANDS	1721.	1850.	1362.	1279.	1151.	1156.	840.	855.	684.	966.
DIATOMS ORG/LITER IN THOUSANDS PERCENTAGE	498. 29.0	457. 24.7	534. 39.2	498. 38.2	408. 35.5	429. 37.1	329. 39.1	267. 31.2	344. 39.0	342. 35.4
GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	231. 13.4	211. 11.4	180. 13.2	154. 12.0	193. 16.7	177. 15.3	157. 18.7	203. 23.7	146. 16.6	203. 21.0
BLUE-GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	5. .3	10. .6	10. .8	5. .4	0. 0	10. .9	0. 0	5. .6	5. .6	3. .3
GOLDEN BROWN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	10. .6	15. .8	5. .4	5. .4	21. 1.8	13. 1.1	10. 1.2	5. .6	6. .9	13. 1.3
DINOFLAGELLATES ORG/LITER IN THOUSANDS PERCENTAGE	5. .3	10. .6	0. 0	15. 1.2	3. .2	3. .2	0. 0	5. .6	5. .6	0. 0
CRYPTOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	966. 56.1	1141. 61.7	622. 45.7	601. 47.0	524. 45.5	524. 45.3	344. 41.0	370. 43.2	375. 42.4	403. 41.6
EUGLENOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	5. .3	5. .3	10. .8	10. .8	3. .2	0. 0	0. 0	0. 0	0. 0	3. .3
COMMON SPECIES (PERCENTAGE)										
CRYPTOMONAS EROSA	29.9	37.8	29.1	26.9	25.9	29.6	25.1	30.0	28.8	25.0
CHROMOMONAS SP.	26.3	23.9	16.6	20.1	19.6	15.8	15.9	13.2	13.7	16.8
CYCLOTELLA SP.	14.0	11.4	16.5	16.9	16.8	14.7	16.8	13.2	22.1	15.4
MELOSIRA ISLANDICA	8.7	8.9	14.0	16.5	10.9	16.2	16.5	12.9	11.6	14.1
COCCOID GREENS	6.3	5.6	5.7	4.8	3.8	3.3	7.0	8.7	4.1	6.1
SCHEDEDESmus QUADRICAUDA	3.6	2.5	3.4	3.6	4.9	5.5	8.4	5.8	5.0	8.0
FERNATE	3.6	3.6	3.4	2.8	4.9	4.7	4.6	4.5	4.7	3.7
TOTAL NUMBER OF TAXA	23	20	22	24	24	30	24	22	21	24
SHANNON-WEAVER DIVERSITY INDEX	2.014	1.866	2.101	1.957	2.139	2.163	2.164	2.173	2.084	2.225

TABLE E-2

Phytoplankton numbers(in thousands) per liter for each duplicate sample collected on February 13, 1976, at five zones in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1		ZONE 3		ZONE 5		ZONE 7		ZONE 9	
	1	2	1	2	1	2	1	2	1	2
TOTAL COUNT ORG/LITER IN THOUSANDS	207.	212.	46.	100.	116.	82.	188.	153.	230.	195.
DIATOMS ORG/LITER IN THOUSANDS PERCENTAGE	108. 52.2	93. 43.6	12. 25.0	12. 11.5	53. 45.6	31. 37.5	111. 58.9	100. 65.5	150. 65.4	141. 72.4
GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	46. 22.4	50. 23.6	12. 25.0	15. 15.4	17. 14.4	22. 26.6	33. 17.8	19. 12.6	19. 8.4	15. 7.9
BLUE-GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	44. 21.1	49. 23.0	17. 36.1	72. 71.8	40. 34.4	15. 18.8	27. 14.4	31. 20.2	57. 24.6	30. 15.1
GOLDEN BROWN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	1. .6	0. 0.0	3. 5.6	1. 1.3	0. 0.0	4. 4.7	0. 0.0	1. .8	0. 0.0	0. 0.0
INFUSORIA ORG/LITER IN THOUSANDS PERCENTAGE	5. 2.5	21. 9.7	0. 0.0	0. 0.0	1. 1.1	1. 1.6	8. 4.1	1. .8	4. 1.7	4. 2.0
CRYPTOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	1. .6	0. 0.0	3. 5.6	0. 0.0	3. 2.2	8. 9.4	9. 4.8	0. 0.0	0. 0.0	5. 2.6
EULEGOMONIOTA ORG/LITER IN THOUSANDS PERCENTAGE	1. .6	0. 0.0	1. 2.8	0. 0.0	3. 2.2	1. 1.6	0. 0.0	0. 0.0	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)										
OSCILLATORIA SP	21.1	23.0	36.1	71.8	34.4	18.8	14.4	20.2	24.6	15.1
PENNATE	26.7	23.0	11.1	5.1	32.2	17.2	29.5	37.0	22.9	28.3
COCCOID GREENS	19.9	23.0	22.2	12.8	6.7	17.2	15.8	9.2	7.8	6.6
NITZSCHIA SP	15.5	7.9	8.3	1.3	7.8	4.7	10.3	10.9	13.4	14.5
NITZSCHIA FOSEA	.6	3.0	2.8	0.0	0.0	6.3	7.5	4.2	11.2	10.5
GOMPHONEMA SP	.6	.6	0.0	1.3	3.3	6.3	4.8	3.4	2.2	4.6
NITZSCHIA VERMICULARIS	.6	3.6	0.0	0.0	0.0	0.0	3.4	.8	8.4	9.2
ANASTRODESMUS FALCATUS	2.5	0.0	2.8	1.3	6.7	6.3	2.1	3.4	.6	0.0
GYNCHIUM SP	2.5	9.7	0.0	0.0	1.1	1.6	4.1	.8	1.7	2.0
CYCLOTELLA SP	5.0	2.4	2.8	0.0	0.0	3.1	0.0	.8	.6	1.3
CRYPTOMONAS ERosa	0.0	0.0	5.6	0.0	2.2	4.7	2.1	0.0	0.0	1.3
ICHTHOMONAS SP	.6	0.0	5.6	0.0	0.0	0.0	0.0	.6	0.0	0.0
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	1.36	1.4	10	10	12	15	13	15	13	17
	1.954	1.966	1.873	1.083	1.774	2.389	2.148	1.990	2.056	2.191

TABLE E-3

Phytoplankton numbers (in thousands) per liter for each duplicate sample collected on May 13, 1976, at five zones in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1		ZONE 3		ZONE 5		ZONE 7		ZONE 9	
	1	2	1	2	1	2	1	2	1	2
TOTAL COUNT ORG/LITER IN THOUSANDS	1215.	1233.	1382.	1246.	1436.	1315.	1233.	1020.	1076.	1056.
DIATOMS ORG/LITER IN THOUSANDS PERCENTAGE	727. 59.8	701. 56.9	904. 65.4	796. 63.9	956. 66.5	825. 62.7	732. 59.4	596. 58.4	614. 57.0	647. 61.3
GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	110. 9.1	134. 10.8	164. 11.9	172. 13.8	193. 13.4	136. 10.4	195. 15.8	170. 16.6	193. 16.6	131. 12.4
BLUE-GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	5. .4	5. .4	8. .6	3. .2	5. .4	3. .2	0. .0	0. .0	8. .8	3. .2
GYPSIUM TROPHIC ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	190. 16.3	180. 15.2	113. 8.2	80. 6.4	92. 6.4	167. 12.7	128. 10.4	51. 5.0	87. 8.1	108. 10.2
INFUSORIA ORG/LITER IN THOUSANDS PERCENTAGE	3. .2	0. 0.0	0. 0.0	0. 0.0	5. .4	0. 0.0	0. 0.0	3. .3	0. 0.0	0. 0.0
CRYPTOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	167. 13.7	206. 16.7	172. 12.5	180. 14.4	172. 12.0	162. 12.3	164. 13.3	175. 17.1	167. 17.1	162. 15.5
EUGLENOMYTA ORG/LITER IN THOUSANDS PERCENTAGE	5. .4	0. 0.0	21. 1.5	15. 1.2	13. .9	23. 1.8	13. 1.0	18. 1.8	8. .7	5. .5
COMMON SPECIES (PERCENTAGE)										
CYCLOMILLIA-STEPHANODISCUS	38.7	37.6	43.7	44.1	40.1	44.3	40.6	38.3	42.7	41.8
FERNATE	7.8	8.3	11.5	11.5	14.3	9.4	11.5	13.4	6.7	10.2
CRYPTOHOMIA EROSA	8.7	8.5	8.0	7.2	7.2	6.9	9.3	9.5	8.5	8.5
COCCOTYL GREENS	4.4	6.3	6.1	7.7	7.7	4.3	10.2	8.3	10.7	7.5
SYNURA SF	13.1	12.3	5.2	3.1	4.5	8.8	6.7	2.5	3.8	4.7
CHROODORAS ACUTA	5.1	8.1	4.5	5.2	4.8	5.3	6.5	7.8	6.0	6.8
NITZSCHIA ACICULARIS	6.8	6.5	6.5	5.4	8.9	5.9	4.4	3.8	3.1	3.9
ANKISTROTHESMUS FALCATUS	2.1	1.9	3.3	4.3	2.5	2.1	4.2	6.0	5.0	2.9
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	32	21	26	25	28	28	21	27	26	26
	2,244	2,073	2,107	2,054	2,126	2,132	2,099	2,180	2,136	2,161

TABLE E-4

Phytoplankton numbers (in thousands) per liter for each duplicate sample collected on June 15, 1976, at five zones in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1		ZONE 3		ZONE 5		ZONE 7		ZONE 9	
	1	2	1	2	1	2	1	2	1	2
TOTAL COUNT ORG/LITER IN THOUSANDS	8786.	10135.	4611.	3943.	4663.	4355.	13140.	11882.	11021.	10854.
DIATOMS ORG/LITER IN THOUSANDS PERCENTAGE	2954. 33.6	3995. 39.4	1863. 40.4	1901. 48.2	1875. 40.2	2094. 43.1	9056. 68.9	8105. 68.2	7758. 70.4	8401. 77.4
GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	3494. 39.8	4136. 40.8	2338. 50.7	1747. 44.3	2209. 47.4	2196. 45.2	3006. 22.9	2800. 23.6	2376. 21.6	1875. 17.3
BLUE-GREEN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	13. .1	0. 0.0	64. .6	0. 0.0						
GOLDEN BROWN ALGAE ORG/LITER IN THOUSANDS PERCENTAGE	154. 1.8	154. 1.5	26. .6	13. .3	13. .3	26. .5	128. 1.0	51. .4	218. 2.0	77. .7
INFUSORIA ORG/LITER IN THOUSANDS PERCENTAGE	64. .7	64. .6	26. .6	26. .7	0. 0.0	39. .8	64. .5	64. .5	0. 0.0	0. 0.0
CRYPTOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	2068. 23.5	1747. 17.2	321. 7.0	218. 5.5	527. 11.3	462. 9.5	886. 6.7	848. 7.1	578. 5.2	488. 4.5
EUGLENOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	39. .4	13. .1	39. .8	26. .7	39. .8	26. .5	0. 0.0	13. .1	26. .2	13. .1
XANTHOPHYTA ORG/LITER IN THOUSANDS PERCENTAGE	0. 0.0	26. .3	0. 0.0	13. .3	0. 0.0	13. .3	0. 0.0	0. 0.0	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)										
CYCLOTILLA STEPHANODISCUS	22.0	29.7	24.2	31.3	22.3	22.0	62.6	62.1	64.9	72.3
ANKISTROMUS FALCATUS	11.4	11.5	20.1	14.0	15.7	17.2	6.1	5.7	6.1	4.6
COCCOID GREENS	10.2	12.4	10.6	11.1	12.4	11.1	10.7	11.6	7.0	6.9
CRYPTONAS EROSA	10.8	8.0	5.3	5.2	6.9	6.1	2.4	3.2	2.9	1.9
CHROMONAS ACUTA	12.7	9.3	1.7	1.3	4.4	3.4	4.3	3.9	2.3	2.6
NITZSCIA ACICULARIS FENNATE	3.7	3.8	5.0	5.2	6.3	7.4	2.0	1.7	1.6	1.8
3.2	2.8	3.6	3.3	6.3	4.8	2.2	2.5	1.9	1.2	
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	37 2.662	38 2.511	31 2.668	33 2.540	37 2.667	38 2.703	35 1.598	33 1.608	36 1.624	32 1.323





TABLE E-5

Periphyton in numbers per square centimeter (cm^2) from each of four slides for the exposure period April 20 - May 20, 1976, at 9 sites in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1				ZONE 2				ZONE 3			
	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4
TOTAL COUNT ORGANISMS/SQ CM	110526.	56637.	55020.	151900.	117478.	50995.	166060.	109890.	303961.	17610.	391309.	302673.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	110019. 99.5	55552. 98.1	54180. 98.5	150815. 95.3	116874. 99.5	50778. 99.6	163520. 98.2	108891. 99.1	303710. 99.9	178451. 99.9	390556. 99.8	301679. 99.7
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	507. .5	1085. 1.9	840. 1.5	651. .4	604. .5	217. .4	2460. 1.6	999. .9	251. .1	0. 0.0	753. .2	0. 0.0
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	434. .3	0. 0.0	0. .0	380. .2	0. 0.0	0. 0.0	0. 0.0	0. 0.0	994. .3
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	259. .1	0. 0.0	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)												
ACIRANTHES LANCEOLATA	67.0	68.6	56.9	76.4	55.5	56.2	55.1	52.1	70.7	73.9	76.7	79.1
FENNAE	11.5	5.7	11.1	7.0	12.6	8.5	8.7	10.0	6.4	7.2	5.3	5.1
NAVICULA TRIFUNICATA	1.9	3.6	10.7	1.4	5.9	6.8	7.6	7.0	4.8	4.1	4.4	6.6
MITZCHIA SP.	2.8	5.4	6.1	2.3	3.9	7.2	6.2	10.6	4	4	3	2
NAVICULA RHYNCHOCERHALA	4.1	3.1	3.8	3.4	5.1	4.7	5.9	5.8	2.8	1.6	2.6	1.3
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	118 1.354	119 1.395	116 1.597	112 1.071	115 1.656	117 1.700	21 1.752	17 1.732	115 1.117	117 1.166	118 1.082	13 .917



TABLE E-5 cont.

page 2 of 3

TAXA	ZONE 4				ZONE 5				ZONE 6			
	4-1	4-2	4-3	4-4	5-1	5-2	5-3	5-4	6-1	6-2	6-3	6-4
TOTAL COUNT ORGANISMS/SQ CM	23112.	21250.	23310.	20250.	44092.	63754.	29346.	46640.	15250.	13150.	9064.	27722.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	22898. 99.1	21125. 99.4	23205. 99.5	20125. 99.4	43508. 98.7	63503. 99.6	28762. 98.0	46640. 100.0	15125. 99.2	13000. 98.1	9064. 100.0	27221. 98.2
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	0. 0.0	125. .6	105. .5	0. 0.0	584. 1.3	251. .4	584. 2.0	0. 0.0	125. .8	125. .9	0. 0.0	501. 1.8
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	107. .5	0. 0.0	0. 0.0	0. .6	125. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	107. .5	0. 0.0	0. 0.0	125. .9	0. 0.0	0. 0.0						
COMMON SPECIES (PERCENTAGE)												
ACINANTHES LANCEOLATA	25.9	32.4	32.9	29.6	57.6	39.0	36.0	26.9	69.7	34.0	41.7	59.0
NAVICULA TRIFUNICATA	25.5	16.5	27.0	21.6	7.3	1.2	16.4	1.9	1.6	13.2	16.5	5.4
PENNIATE	16.7	12.9	7.7	14.2	6.6	5.9	13.4	7.1	12.3	17.0	9.7	10.2
COTYLDEYS PLACENTULA U LINEATA	3.7	1.8	4.5	5.6	3.3	33.5	5.0	49.5	2.5	9.4	9.7	3.0
NAVICULA RYNCHOCHEPHALA	10.6	11.2	13.1	14.0	7.9	1.6	0.5	1.9	3.3	8.5	1.9	7.2
NITZSCHEA SP.	6.5	10.0	3.6	4.9	2.6	0.0	4.5	0.0	2.5	3.8	1.9	
GAMMAREMA SP.	1.4	0.0	0.0	1.2	.7	9.1	.5	8.0	3.3	1.9	4.9	1.8
NITZSCHEA PALEA	1.4	5.3	1.4	1.2	6.0	0.0	2.5	0.0	1.6	4.7	3.9	3.6
CYRELLA VENTRICOSA	1.9	1.2	3.2	2.5	2.0	5.1	1.0	1.4	0.0	.9	1.9	1.0
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	15 2.013	17 2.079	14 1.901	13 1.951	1.624	1.602	1.7 2.046	1.462	12 1.208	14 2.036	12 1.892	13 1.584

TABLE E-5 cont.

Page 3 of 3

TAXA	ZONE 7			ZONE 8			ZONE 9					
	7-1	7-2	7-3	7-4	8-1	8-2	8-3	8-4	9-1	9-2	9-3	9-4
TOTAL COUNT ORGANISMS/SQ CM	237697.	254940.	22890.	20126.	19125.	32480.	37444.	12798.	8744.	12055.	8986.	117135.
PLATONS ORGANISMS/SQ CM	236244.	254520.	22680.	20120.	19000.	32200.	36852.	12728.	8686.	120304.	8736.	117135.
PERCENTAGE	99.7	99.8	99.1	100.0	99.3	99.1	98.4	100.0	97.1	99.9	97.2	100.0
GREEN ALGAE ORGANISMS/SQ CM	753.	420.	105.	0.	0.	0.	0.	0.	258.	171.	0.	0.
PERCENTAGE	.3	.2	.5	0.0	0.0	0.0	0.0	0.0	2.9	1.1	0.0	0.0
BLUE-GREEN ALGAE ORGANISMS/SQ CM	0.	0.	105.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PERCENTAGE	0.0	0.0	.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0
CRYPTOPHYTA ORGANISMS/SQ CM	0.	0.	0.	0.	125.	200.	296.	0.	0.	0.	0.	0.
PERCENTAGE	0.0	0.0	0.0	0.0	.7	.9	.8	0.0	0.0	0.0	.9	0.0
COMMON SPECIES (PERCENTAGE)												
MICROCHIUS LANCEOLATA	83.2	80.8	39.0	49.0	43.1	28.5	40.1	50.0	44.1	37.4	49.5	
FERRATE	2.2	2.1	16.9	11.1	15.5	27.3	9.9	8.7	18.7	16.8	13.1	
NAVICULA RHYNCHOCEPHALA	1.4	1.9	14.2	15.4	9.2	8.6	11.1	9.9	4.8	5.7	4.7	
NAVICULA TRIFORICATA	.8	.7	9.2	14.0	2.6	9.1	8.3	4.9	13.5	2.1	21.5	
COMPHONEMA SF	4.2	3.1	3.7	4.4	3.3	.9	2.8	1.2	2.9	16.7	1.9	
COCCONECIS PLACENTULA V LINEATA	5.5	6.8	2.3	.7	7.8	3.9	.0	2.5	7.7	6.1	6.5	
NITZSCHIA FALEA	.3	.7	4.6	4.4	3.9	6.5	6.7	9.9	1.0	1.7	1.9	
NITZSCHIA SF	.1	.1	4.1	1.5	5.2	4.3	4.3	4.9	2.9	.9	1.9	
TOTAL NUMBER OF TAXA	15	14	15	11	13	17	19	13	17	15	14	11
SHANNON-WEAVER DIVERSITY INDEX	.773	.872	1.968	1.765	1.813	1.924	2.072	1.826	1.623	1.697	1.866	1.372

TABLE E-6

Periphyton in numbers per square centimeter(cm^2) from each of four slides for the exposure period May 21-June 23, 1976, at 9 sites in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1				ZONE 2				ZONE 3			
	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4
TOTAL COUNT ORGANISMS/SQ CM	60900.	109870.	74337.	76440.	80940.	107868.	56637.	69874.	60502.	26448.	55973.	34889.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	59340.	106190.	72846.	73080.	78597.	9788.	53382.	66185.	53742.	18012.	53463.	32379.
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	1050.	3700.	1491.	2520.	1917.	8544.	3255.	3689.	6760.	8436.	2259.	2259.
DINOFLAGELLATES ORGANISMS/SQ CM PERCENTAGE	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.	0.0.
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	210.	0.	0.	0.	840.	0.	2136.	0.	0.	0.	0.0.	251.
ANTHOPHYTA ORGANISMS/SQ CM PERCENTAGE	0.	0.	0.	0.	0.	213.	0.	0.	0.	0.	0.0.	.7
COMMON SPECIES (PERCENTAGE)												
ACHMANTHES LANCEOLATA	57.9	54.9	56.7	53.3	51.3	48.0	57.5	67.4	26.8	20.7	85.7	10.1
COCCOBACILLUS FLACCIDULUS V LINEATA	34.8	37.4	39.8	39.6	39.5	34.7	26.8	21.1	55.3	8.6	7.6	73.4
CYCLOSTELLA-STEPHANOPOVICUS	0.0	1.3	.6	1.1	2.4	3.0	6.1	2.8	1.1	17.2	.9	6.5
ACTINASTRUM HANTZSCHII	0.0	2.0	.6	1.4	.8	2.7	1.9	.9	2.2	5.2	.9	1.4
SCLENOBACILLUS QUADRICAUDA	.7	.3	.6	.8	0.0	2.0	.4	.3	2.2	11.2	.4	.7
FENNATE	2.1	1.3	.9	.8	1.1	1.5	1.1	1.2	.6	5.2	.4	1.4
COCCOBACILLUS GREENS	0.0	1.0	0.0	0.0	0.0	.5	1.5	0.0	3.4	6.0	.4	.7
MELOSIRA ITALICA	.3	0.0	0.0	0.0	.3	0.0	.8	.3	0.0	0.6	.9	0.0
COCCOBACILLUS GREEN COLONIES												
TOTAL NUMBER OF TAXA	112	111	8	12	17	15	14	16	12	17	12	14
SHANNON-WEAVER DIVERSITY INDEX	1.020	1.049	.864	1.044	1.154	1.429	1.279	1.112	1.379	2.41:	.659	1.103



TABLE E-6 cont.

page 2 of 3



TAXA	ZONE 4				ZONE 5				ZONE 6			
	4-1	4-2	4-3	4-4	5-1	5-2	5-3	5-4	6-1	6-2	6-3	6-4
TOTAL COUNT ORGANISMS/SQ CM	12446.	10721.	6630.	4277.	10790.	10292.	13446.	12250.	3317.	4935.	7560.	5145.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	6096. 49.0	6191. 57.7	3640. 54.9	2457. 57.4	5312. 49.2	6474. 51.6	5400. 48.1	45.7	1819. 54.8	2205. 44.7	3255. 43.1	2100. 40.8
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	5969. 48.0	3926. 36.6	2600. 39.2	1729. 40.4	5478. 50.8	4980. 48.4	6640. 49.4	54.3	1391. 41.9	2730. 55.3	3885. 51.4	2835. 55.1
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	130. 2.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	420. 5.6	0. 0.0	0. 0.0
GOLDEN BROWN ALGAE ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	130. 2.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0
CRYPTOFIYTA ORGANISMS/SQ CM PERCENTAGE	381. 3.1	302. 2.8	0. 0.0	91. 2.1	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	107. 3.2	0. 0.0	0. 0.0
EUGLENOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	151. 1.4	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	332. 2.5	0. 0.0	0. 0.0	0. 0.0
XANTHOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	151. 1.4	130. 2.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	210. 4.1
COMMON SPECIES (PERCENTAGE)												
CYCLOSTELLA-STEVANODISCUS ACTINOMASTIGA HANITSCHII	13.3 24.5	15.5 9.7	12.6 5.9	12.8 8.5	6.2 10.8	16.1 4.8	9.9 17.6	12.9 8.6	6.5 11.4	14.9 10.0	15.3 16.1	18.4 19.1
SCENELESNUS QUADRIFOLIA COCCOID GREEN COLONIES	6.1 3.1	14.1 1.4	5.9 9.8	10.6 4.3	18.5 7.7	17.5 14.5	8.6 9.9	10.0 3.7	0.0 10.0	19.1 9.7	5.6 8.5	22.4 12.2
ANKISTOKINESMUS FALCATUS ACHNANTHES LANCEOLATA	4.1 11.2	7.0 7.0	5.9 11.0	0.0 2.1	6.2 6.2	1.6 8.1	1.6 14.8	4.3 3.7	6.4 7.1	6.4 3.2	6.1 2.1	8.2 12.2
MELOSIRA ITALICA CUCCOENJS PLACENTULA V LINEATA	6.1 1.0	7.0 1.0	0.0 14.9	6.4 7.8	10.0 7.7	6.5 7.4	3.7 4.9	4.3 2.9	4.3 2.9	4.3 2.9	4.2 3.2	0.0 15.3
MELOSIRA ISLANDICA FENNTE	3.1 3.1	5.6 14.1	9.8 0.0	6.4 4.3	7.7 3.1	4.9 1.6	4.9 2.5	2.9 1.4	6.5 9.7	8.5 8.5	1.4 4.2	2.0 6.1
COCCOID GREENS HITZEMIA PALEA	6.1 4.1	1.4 1.4	3.9 2.0	12.8 6.4	0.0 4.6	4.8 0.0	5.7 3.7	5.7 1.4	0.0 0.0	6.4 6.5	2.0 4.3	2.0 1.4
SCENELESNUS DIHOEKHUS BLUE-GREEN TRICHOMES	0.0 0.0	0.0 0.0	3.9 2.0	2.1 0.0	4.6 0.0	3.2 0.0	3.7 0.0	7.1 0.0	0.0 0.0	2.1 0.0	4.2 5.6	2.0 0.0
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	20 2.550	17 2.500	17 2.570	15 2.515	14 2.504	15 2.401	17 2.502	15 2.481	12 2.344	15 2.487	13 2.197	13 2.235

TABLE E-6 cont.

page 3 of 3

TAXA	ZONE 7				ZONE 8				ZONE 9			
	7-1	7-2	7-3	7-4	8-1	8-2	8-3	8-4	9-1	9-2	9-3	9-4
TOTAL COUNT ORGANISMS/SQ CM	10375.	14820.	116715.	90099.	10908.	13755.	15943.	7245.	12432.	14560.	22733.	29700.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	7625. 73.5	8710. 58.8	109938. 94.2	84135. 93.4	4212. 38.6	9975. 72.5	10165. 63.8	3045. 42.0	5600. 45.0	9750. 67.0	17653. 77.7	25478. 85.8
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	2500. 24.1	5980. 40.4	6777. 5.8	5538. 6.1	6372. 58.4	3465. 25.2	5671. 35.6	4200. 58.0	6608. 53.2	4810. 33.0	5080. 22.3	4224. 14.2
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	250. 2.4	0. 0.0	0. 0.0	213. .2	216. 2.0	105. .8	0. 0.0	0. 0.0	112. .9	0. 0.0	0. 0.0	0. 0.0
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	130. .9	0. 0.0	213. .2	0. 0.0	210. 1.5	107. .7	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0
EUGLENOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	0. 0.0	108. 1.0	0. 0.0	0. 0.0	0. 0.0	112. .9	0. 0.0	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)												
ACHRANTHES LANCEOLATA	22.9	15.8	51.0	41.1	0.0	33.6	27.5	0.0	3.6	14.3	29.1	27.6
COCCORELLIS FLACENTIA V LINEATA	18.1	18.4	35.3	43.5	5.9	16.0	11.4	0.0	8.1	22.3	25.1	44.0
ACTINOSTRUM HANTZSCHII	7.2	6.1	.6	.9	22.0	10.7	16.0	24.6	22.5	10.7	10.1	7.6
SCENIDIOMUS QUADRICAUDA	8.4	17.5	.4	1.2	12.9	5.3	6.0	11.6	10.6	8.9	2.8	1.8
COCCOID GREEN COLONIES	7.2	6.1	.9	.2	16.8	4.6	6.7	11.6	11.7	8.0	5.0	1.8
CYCLOSTELLA-STEFHANO DISCUS	13.3	6.1	.9	2.1	13.9	6.9	4.0	5.8	9.0	7.1	5.6	5.3
FENNATE	6.0	7.9	2.8	2.4	1.0	8.4	4.0	5.8	1.8	7.1	5.6	2.2
HELOSIRA ITALICA	3.6	2.6	.2	.2	8.9	2.3	4.0	14.5	9.9	4.5	1.7	1.3
MELOSIRA ISLANDICA	1.2	.9	0.0	0.0	4.0	.8	.7	8.7	3.6	.9	.6	.9
TOTAL NUMBER OF TAXA SHARON-WEAVER DIVERSITY INDEX	2.361	2.464	1.342	1.408	2.330	2.173	2.403	2.289	2.472	2.446	2.204	1.723

TABLE E-7

Periphyton in numbers per square centimeter(cm^2) from each of four slides for the exposure period May 21 - August 18, 1976, at 5 sites in the Grand River, and the abundance and percent composition by major groups. The most common species found in each sample are listed.

TAXA	ZONE 1				ZONE 2				ZONE 3			
	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4
TOTAL COUNT ORGANISMS/SQ CM	6939.	10590.	23777.	19789.	21930.	16392.	8976.	9660.	34600.	21384.	53630.	70380.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	3855. 55.6	6707. 63.3	17732. 74.6	13364. 67.5	18105. 82.6	10975. 85.8	6732. 75.0	5060. 52.4	27680. 80.0	15552. 72.7	42212. 78.7	42220. 60.0
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	1799. 25.9	3530. 33.3	3627. 15.3	4626. 23.4	3825. 17.4	5707. 34.2	1496. 16.7	3680. 38.1	6920. 20.0	5832. 27.3	8996. 16.8	26082. 37.1
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	1028. 14.8	353. 3.3	2410. 10.2	1542. 7.8	0. 0.0	0. 0.0	0. 0.0	460. 4.8	0. 0.0	0. 0.0	2422. 4.5	2070. 2.9
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	257. 3.7	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	740. 8.3	0. 0.0	0. 0.0	0. 0.0	0. 0.0
EUGLENOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	0. 1.3	257. 0.0	0. 0.0	0. 0.0	230. 2.4	0. 0.0	0. 0.0	0. 0.0	0. 0.0
XANTHOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	230. 2.4	0. 0.0	0. 0.0	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)												
HELOSTRA FILALICA	18.5	30.0	6.8	23.4	8.1	10.4	12.5	21.4	29.0	22.7	14.2	32.4
COCCONIUS FLACENTULA V LINEATA	7.4	10.0	6.0	7.0	20.2	15.0	12.5	7.1	31.0	40.9	34.0	5.3
SCENESESNIUS QUADRICUDA	11.1	10.0	8.5	9.1	5.8	23.7	12.5	14.3	16.0	13.6	7.1	22.9
FENNATE LANCEOLATA	14.8	6.7	35.6	13.0	11.6	7.9	4.2	4.8	7.0	3.4	7.7	4.7
ACINANTHES STEPHANOTISSUS	0.0	0.0	0.0	0.0	30.2	5.3	33.3	4.8	0.0	3.4	9.0	3.5
CYCLOTELLA STEPHANOTISSUS	11.1	10.0	1.7	2.6	8.1	10.5	12.5	4.8	1.0	0.0	1.3	5.2
BLUE-GREEN TRICHOMES	14.8	3.3	10.2	7.0	0.0	0.0	0.0	4.8	0.0	0.0	4.5	2.9
COCCOID GREENS	0.0	20.0	0.0	1.3	3.5	2.6	0.0	14.3	1.0	0.0	1.9	2.7
COCCOID GREEN COLONIES	14.0	0.0	5.1	2.6	0.0	2.6	4.2	4.8	0.0	6.8	1.3	1.8
HELOSTRA ISLANDICA	0.0	0.0	6.8	3.9	3.5	5.3	0.0	7.1	2.0	2.3	3.9	5.3
SCENESESNIUS DIMORPHUS	0.0	3.3	0.0	6.5	2.3	5.3	0.0	0.0	3.0	5.7	3.2	5.9
GOMPHIONEMA SF	3.7	0.0	5.1	16.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HELOSTRA VARIANS	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	5.0	0.0	5.2	0.0
HELOSTRA GRANULATA	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.6
CRYPTOMONAS EROSA	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL NUMBER OF TAXA	9	9	15	15	12	11	8	15	11	9	15	19
SHANNON-WEAVER DIVERSITY INDEX	2.086	1.962	2.235	2.297	2.061	2.134	1.878	2.433	1.810	1.687	2.185	2.193



WAPORA

TABLE E-7 cont.

page 2 of 2

TAXA	ZONE 4				ZONE 5			
	4-1	4-2	4-3	4-4	5-1	5-2	5-3	5-4
TOTAL COUNT ORGANISMS/SQ CM	13032.	23550.	11136.	8322.	3990.	4408.	4294.	2736.
DIATOMS ORGANISMS/SQ CM PERCENTAGE	11160. 15.6	21450. 91.1	9744. 87.5	7068. 84.9	3762. 94.3	2888. 65.5	2712. 63.2	1944. 71.1
GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	1872. 14.4	2100. 8.9	1160. 10.4	1254. 15.1	228. 5.7	1368. 31.0	1582. 36.8	720. 26.3
BLUE-GREEN ALGAE ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	116. 1.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0
CRYPTOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	116. 1.0	0. 0.0	0. 0.0	76. 1.7	0. 0.0	72. 2.6
EUGLENOPHYTA ORGANISMS/SQ CM PERCENTAGE	0. 0.0	0. 0.0	0. 0.0	0. 0.0	0. 0.0	76. 1.7	0. 0.0	0. 0.0
COMMON SPECIES (PERCENTAGE)								
COCCONEIS FLACENTULA V LINEATA	64.6	65.0	70.8	34.2	60.0	5.2	2.6	21.1
MELOSIRA ITALICA	12.2	10.2	5.2	23.3	17.1	29.3	47.4	10.5
SCENEDESmus QUADRICAUDA	8.8	6.4	6.3	5.5	0.0	22.4	28.9	18.4
FENNATE	1.1	3.8	6.3	6.8	2.9	10.3	5.3	10.5
CYCLOTELLA-STEPHANODISCUS	1.7	8.3	1.0	4.1	2.9	5.2	5.3	13.2
SCENEDESmus DIMORPHUS	.6	1.9	1.0	2.7	5.7	3.4	5.3	2.6
MELOSIRA ISLANDICA	1.1	2.5	1.0	1.4	2.9	6.9	2.6	0.0
ACHNANTHES LANCEOLATA	.6	0.0	1.0	11.0	2.9	1.7	0.0	0.0
MELOSIRA GRANULATA	0.0	1.3	1.0	1.4	0.0	6.9	0.0	5.3
MELOSIRA VARIANS	1.1	0.0	0.0	5.7	0.0	0.0	0.0	7.9
TOTAL NUMBER OF TAXA SHANNON-WEAVER DIVERSITY INDEX	16 1.383	9 1.276	14 1.253	14 2.005	8 1.342	13 2.117	8 1.465	12 2.215

APPENDIX FTABLE NO.

	<u>PAGE</u>
F-1 Hester-Dendy, Sites 1-9, April 21 - May 21, 1976	1F
F-2 Hester-Dendy, Sites 1-9, May 21 - June 22, 1976	10F
F-3 Hester-Dendy, Sites 1-5, May 21 - August 18, 1976	19F
F-4 Ponar, Zones 1-9, May 21, 1976	24F
F-5 Ponar, Zones 1-9, June 21, 1976	33F

TABLE F-1

Taxa, abundance(number per sampler), diversity, and percent composition of organisms collected on duplicate Hester-Pendy artificial substrates at sites 1 - 9 in the Grand River, Lansing, Michigan, for the exposure period April 21 - May 21, 1976.

SITE: 1

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-ISOPODA (AQUATIC SOIL BUGS) <i>ASELLUS</i> SP	1 4	5	2.5	1.5	.3
O-DIPTERA (EXCEPT MIDGE)					
SIMULIIDAE PUPAE	7	9	1.6	0.0	1.1
SIMULIIDAE LARVAE	13	18	3.1	1.5	2.0
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	644	650	1.294	647.0	3.0
CHIRONOMIDAE PUPAE	22	23	4.5	2.2	5.0
O-Ephemeroptera (MAYFLIES)					
F-BRATTIDAE	0	4	4	2.0	.3
BAETIS SP	0	6	6	3.0	.4
CENTROPTILUM SP	17	3	2.0	1.0	1.3
PSEUDOCOLEON SP	40	35	75	37.5	2.5
CAENIS SP	2	1	3	1.5	.9
POTOMANTHUS SP	1	0	1	.5	.2
STERONEMA SP	6	4	1.0	5.0	1.1
O-PLECOPTERA (STONE FLIES)					
PERLESTA SP	1	0	1	.5	.1
O-TRICHOPTERA (CADDISFLIES)					
CHEMOTOPSYCHE SP	1	3	4	2.0	.3
HYDROPSYCHE ORVIS	1	1	2	1.0	.0
POLYCENTROPUS SP	1	0	1	.5	.1
TOTAL NO OF ORGANISMS	757	761	1518	759.0	2.0
TOTAL NO OF TAXA	14	13	16		
SHANNON-WEAVER INDEX	.70	.71	.71		

TABLE F-1 cont.

SITE: 2

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-COLEOPTERA (BEETLES)					
F-ELMIDAE ADULT	1	0	1	.5	.1
O-DIPTERA (EXCEPT MIDGE)					
CULICINAE LARVAE	2	0	2	1.0	.2
CULICINAE PUPAE	6	0	6	3.0	.7
SI MULTIDAE PUPAE	40	1	41	20.5	5.0
SI MULTIDAE LARVAE	14	0	14	7.0	1.7
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	388	262	650	325.0	80.0
CHIRONOMIDAE PUPAE	32	7	39	19.5	4.8
O-Ephemeroptera (Mayflies)					
F-BAETIDAE	1	2	3	1.5	.4
BAETIS SP	8	1	9	4.5	1.1
CENTROPTILUM SP	3	2	5	2.5	.6
PSEUDOCLEON SP	17	2	19	9.5	2.3
BAETISCA BAJKOVI	0	1	1	.5	.1
CAENIS SP	0	10	10	5.0	1.2
STENONEMA SP	6	1	7	3.5	.9
O-Odonata (Dragonflies)					
ENALLAGMA SP	0	2	2	1.0	.2
O-Plecoptera (Stone flies)					
PERLESTA SP	0	1	1	.5	.1
O-Trichoptera (Caddisflies)					
CHEOMATOPSYCHE SP	0	1	1	.5	.1
HYDROPSYCHE SP	1	0	1	.5	.1
TOTAL NO OF ORGANISMS	519	293	812	406.0	113.0
TOTAL NO OF TAXA	13	13	16		
SHANNON-WEAVER INDEX	1.05	.56	.94		



WAPORA

TABLE F-1 cont.

SITE: 3

TAXA	REPLICATES 1	REPLICATES 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-DECAPODA (CRAYFISH)						
0-ISOPODA (AQUATIC SOIL BUGS)	0	5	5	2.5	2.5	.5
ASELLUS SP	6	9	15	7.5	1.5	1.5
O-DIPTERA (EXCEPT MIGES)						
BEZZIA SP	0	2	2	1.0	1.0	.2
CHAOBORUS SP	1	0	1	.5	.5	.1
CULICINAE LARVAE	5	0	5	2.5	2.5	.5
SIMULIIDAE PUPAE	73	0	73	36.5	36.5	.4
SIMULIIDAE LARVAE	42	1	43	21.5	20.5	.4
O-DIPTERA (MIGES)						
CHIRONOMIDAE LARVAE	630	70	750	375.0	305.0	76.4
CHIRONOMIDAE PUPAE	31	1	32	16.0	15.0	3.3
O-EPHemeroptera (MAYFLIES)						
F-BAETIDAE	4	0	4	2.0	2.0	.4
BAETIS SP	12	0	12	6.0	6.0	1.2
PSEUDOCLEON SP	16	0	16	8.0	8.0	1.6
CAENIS SP	0	1	1	.5	.5	.1
EPECURUS SP	1	0	1	.5	.5	.1
STENONEMA SP	2	10	12	6.0	4.0	1.2
O-PLECOPTERA (STONE FLIES)						
PERLESTA SP	2	1	3	1.5	.5	.3
O-TRICHOPTERA (CANOISFLIES)						
CHEUMATOZYCHE SP	1	0	1	.5	.5	.1
HYDROPSYCHE BETTERI	1	0	1	.5	.5	.1
HYDROPSYCHE ORRIS	2	0	2	1.0	1.0	.2
HYDROPSYCHE SIMULANS	1	0	1	.5	.5	.1
PYCHOPSYCHE SP	0	1	1	.5	.5	.1
POLYCENTROFUS SP	1	0	1	.5	.5	.1
TOTAL NO OF ORGANISMS	381	101	982	491.0	390.0	
TOTAL NO OF TAXA	18	10	22			
SHANNON-MEIJER INDEX	.98	1.15	1.06			

SITE: 4

TABLE F-1 cont.

page 4 of 9

TAXA	REPLICATES	TOTAL NO	MEAN	STD ERROR	FCT COEF
	1	2			
O-ISOPODA (AQUATIC SOIL BUGS)					
ASELLUS SP	6.0	4.6	1.06	53.0	7.0
O-DIPTERA (EXCEPT MIDGE)					
CULICINAE LARVAE	4	0	4	2.0	*4
SIMULIIDAE PUPAE	0	1	1	*5	*1
SIMULIIDAE LARVAE	1	1	2	1.0	*2
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	5.23	3.41	3.64	432.0	91.0
CHIRONOMIDAE PUPAE	1.1	5	1.6	3.0	1.5
O-EPHEMEROPTERA (MAYFLIES)					
F-BAETIDAE	3	5	3	4.0	1.0
BAETIS SP	5	6	1.1	*5	*7
CENTROPTILUM SP	2	5	7	3.5	1.0
PSEUDOCOLEON SP	1.1	6	1.9	*5	*6
BAETISCA BAJKOVII	0	1	1	*5	*6
CAENIS SP	3	0	3	1.5	1.3
FOTOMANTHUS SP	2	0	2	1.0	*2
F-HEPTAGENIIDAE	1	0	1	*5	*1
STERONEMA SP	1.8	15	33	1.65	3.1
O-PLECOPTERA (STONE FLIES)					
PERLESTA SP	1	0	1	*5	*1
O-TRICHOPTERA (CADDISFLIES)					
CHEUMATOZYCHE SP	1	0	1	*5	*1
PSYCHODYIID GENUS A	0	1	1	*5	*1
TOTAL NO OF ORGANISMS	646	435	1.081	540.5	105.5
TOTAL NO OF TAXA	15	12	1.8		
SHANOR-MEAYER INDEX	.63	.89	.66		



WAPORA

TABLE F-1 cont.

page 5 of 9

SITE: 5

TAXA	REPLICATES		TOTAL NO	MEAN	STD ERROR	PCT COMP
	1	2				
O-ISOPODA (AQUATIC SOIL BUGS)	29	37	66	33.0	4.0	2.5
ASELLUS SP						
O-DIPTERA (EXCEPT MINGES)						
BEZZIA SP	0	1	1	,5	,5	0.0
SF-CULICINAE	4	0	4	2.0	2.0	,2
SIMULIIDAE PUPAE	620	3	623	311.5	308.5	23.9
SIMULIIDAE LARVAE	994	11	1005	502.5	491.5	36.6
O-DIPTERA (MINGES)						
CHIRONOMIDAE LARVAE	637	142	779	389.5	247.5	29.9
CHIRONOMIDAE PUPAE	31	7	36	19.0	12.0	1.5
O-Ephemeroptera (Mayflies)						
F-BAETIDAE	11	0	11	5.5	5.5	,4
BAETIS SP	23	0	23	1.1.5	1.1.5	,9
CENTROPTILUM SP	3	1	4	2.0	1.0	,2
PSEUDOCLEON SP	22	1	23	1.1.5	1.0.5	,9
CAENIS SP	0	3	3	1.5	1.5	,1
STENONEMA SP	3	12	15	7.5	4.5	,6
O-PLECOPTERA (STONE FLIES)						
PERLESTA SP	1	0	1	,5	,5	0.0
O-TRICHOPTERA (CADDISFLIES)						
HYDROPSYCHE AERATA	1	0	1	,5	,5	0.0
HYDROPSYCHE ORRIS	6	1	7	3.5	2.5	,3
TOTAL NO OF ORGANISMS	2365	219	2604	1302.0	1083.0	
TOTAL NO OF TAXA	14	11	16			
SHANNON-WEAVER INDEX	1.34	1.22	1.41			

TABLE F-1 cont.

page 6 of 9

SITE: 6

TABLE F-1 cont.

TAXA	REPLICATES	TOTAL NO	MEAN	STD ERROR	FCT COMP
	1	2			
O-AMPHIPODA (SCUDS)	0	1	*5	*5	*1
GAMMARUS SP					
O-ISOPODA (AQUATIC SOIL BUGS)	10	38	49.0	39.0	12.1
ASCELLUS SP					
O-DIPTERA (EXCEPT MIDGE)	1	1	1.0	0.0	*2
BEZZIA SP					
SIMULIIDAE PUPAE	0	3	1.5	1.5	*4
SIMULIIDAE LARVAE	2	6	4.0	2.0	1.0
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	348	281	62.9	31.4	77.4
CHIRONOMIDAE PUPAE	31	12	4.3	21.5	9.5
O-EPHEMEROPTERA (MAYFLIES)	2	0	2	1.0	1.0
BÄETIS SP					
CENTROPTILUM SP	0	2	1.0	1.0	*2
CÄENIS SP	0	6	3.0	3.0	*7
STENONEMA SP	1	1.5	1.6	0.0	2.0
O-HEMIPTERA (WATER BUGS)					
P-SCLODIAE	1	0	1	*5	*1
O-PLECOPTERA (STONE FLIES)	0	2	1.0	1.0	*2
PERLESTA SP					
TOTAL NO OF ORGANISMS	396	417	81.3	40.6	5
TOTAL NO OF TAXA	9	11	1.3		
SHANNON-WEAVER INDEX	*.50	1.05	*.86		



WAPORA

TABLE F-1 cont.

page 7 of 9

SITE: 7

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	FCT COMP
P-COELENTERATA CHILODIA & JELLYFISH)	7	7	3.5	3.5	*.6
HYDRA SP					
O-ISOPODA AQUATIC SOIL BUGS)	40	12	52	26.0	14.0
ASTELLUS SP					
O-DIPTERA (EXCEPT MIDGE)	1	0	1	*.5	*.1
SF-CULICINAE	0	35	35	17.5	3.0
SIMULIIDAE PUPAE	0	96	96	48.0	8.2
SIMULIIDAE LARVAE	0				
O-DIPTERA (MIDGES)	259	638	697	448.5	189.5
CHIRONOMIDAE LARVAE	39	22	61	30.5	6.5
CHIRONOMIDAE PUPAE					
O-Ephemeroptera (MAYFLIES)	1	11	12	6.0	5.0
BAETIS SP	0	3	3	1.5	1.5
PSEUDOCOLEON SP	4	0	4	2.0	2.0
CÆNIS SP	0	1	1	*.5	*.1
EPHEMERELLA SP					
STENONEMA SP	2	2	4	2.0	0.0
O-Odonata (DAMSELFLIES)	1	1	2	1.0	0.0
ENALLAGMA SP.					
TOTAL NO OF ORGANISMS	354	821	1175	587.5	233.5
TOTAL NO OF TAXA	9	10	13		
SHANNON-MEASER INDEX	*.93	*.65	*.96		

TABLE F-1 cont.

page 8 of 9

SITE: 8

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
P-COELENTERATA (HYDROIDS & JELLYFISH) HYDRA SP	0 1	1	*5	*5	*3
C-HIRUDINEA (LEECHES)	0	1.3	1.3	6.5	6.5
O-ISOPODA (AQUATIC SOIL BUGS) ASELLUS SP	12	34	4.6	23.0	11.0
O-DIPTERA (MIDGES) CHIRONOMIDAE LARVAE	184	65	2.49	1.24*5	39.5
CHIRONOMIDAE PUPAE	12	4	1.6	8.0	4.0
O-EPHemeroptera (MAYFLIES) CAENIS SP	0	1	1	*5	*3
STERONEEMA SP	2	4	6	3.0	1.0
O-OONOTA (DAMSELFLIES) ARGION SP	0	1	1	*5	*3
ARGIA SP	0	7	7	3.5	3.5
TOTAL NO OF ORGANISMS	211	129	340	170.0	41.0
TOTAL NO OF TAXA	5	6	9		
SHANNON-WEAVER INDEX	.52	1.33	.97		



WAPORA

TABLE F-1

page 9 of 9

SITE: 9

TAXA	REPLICATES	TOTAL NO.	MEAN	STD ERROR	FCT COMP
	1	2.			
O-ISOPODA (AQUATIC SOIL BUGS)	2	1	3	1.5	.5
ASELLUS SP					.2
O-OPTERA (EXCEPT WINGES)					
SIHULIDIAE PUPAE	1.0	6	1.6	8.0	1.1
SIHULIDIAE LARVAE	1.13	29	1.47	73.5	9.6
O-OPTERA (WINGES)					
CHIRONOMIDAE LARVAE	8.04	458	1.262	631.0	173.0
CHIRONOMIDAE PUPAE	2.9	20	.49	24.5	4.5
O-EPHEMEROPTERA (MAYFLIES)					
F-BaETIODE	1	2	3	1.5	.5
BAETIS SP	5	0	5	2.5	2.5
CENTROPTILUM SP	4	2	6	3.0	1.0
PSEUDOCLOEON SP	2	2	4	2.0	0.0
CAENIS SP	1	0	1	.5	.5
STEMONEEMA SP	0	2	2	1.0	1.0
TOTAL NO OF ORGANISMS	976	522	1.493	749.0	227.0
TOTAL NO OF TAXA	10	9	1.1		
SHAMON-MEAVER INDEX	.66	.55	.63		



TABLE F-2

Taxa, abundance (number per sampler), diversity, and percent composition of organisms collected on duplicate Hester-Dendy artificial substrates at sites 1 - 9 in the Grand River, Lansing, Michigan, for the exposure period May 21 - June 22, 1976.

SITE: 1

TAXA	REPLICATES	TOTAL NO	MEAN	STD ERROR	PER CENT COMP
O-ISOPODA (AQUATIC SOIL BUGS) ASELLUS SP	2	1	1	.5	.2
O-COLEOPTERA (BEETLES) F-CYANITIDAE	1	0	1	.5	.1
O-DIPTERA (EXCEPT MIDGE) BEZZIA SP	0	2	2	1.0	.1
O-DIPTERA (MIDGES) CHIRONOMIDAE LARVAE CHIRONOMIDAE PUPAE	646 62	903 53	1564 115	777.0 57.5	131.0 4.5
O-EPHEMEROPTERA (MAYFLIES) CAENIS SP TRICORYTHONES SP STENONEMA SP	3 1 4	1 0 5	4 1 1	2.0 .5 .5	1.0 .5 .5
O-TRICHOPTERA (CADDISFLIES) F-HYDROPSYCHIDAE	1	0	1	.5	.1
TOTAL NO OF ORGANISMS	720	970	1670	845.0	125.0
TOTAL NO OF TAXA	8	6	9		
SHANNON-MEAWER INDEX	.40	.27	.33		



WAPORA

TABLE F-2 cont.

page 2 of 9

SITE: 2

TAXA	REPLICATES	TOTAL NO	MEAN	STD ERROR	PCT COMP
	1	2			
O-ISOPODA (AQUATIC SOIL BUGS)					
ASELLUS SP	0	1	.1	.05	.5
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	31.6	52.5	34.1	4.20*.5	77*.9
CHIRONOMIDAE PUPAE	30	27	57	2.6*.5	5*.3
O-EPHEMEROPTERA (HAYFLIES)					
CAENIS SP	0	1	1	.5	.5
TRICORYTHOIDES SP	1	1	2	1*.0	0*.0
STENONEMA SP	30	33	63	3.1*.5	1*.5
O-PLECOPTERA (STONE FLIES)					
PERLESTA SP	1	0	1	.5	.5
O-TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHIDAE LARVAE	13	3	1.6	.8*.0	5*.0
CHEONATOSYCHE SP	57	29	8.6	4.3*.0	14*.0
CHEONATOSYCHE PUPAE	4	0	4	2*.0	2*.0
HYDROPSYCHE FRISONI	0	1	1	.5	.5
HYDROPSYCHE ORRIS	6	0	6	3*.0	3*.0
TOTAL NO OF ORGANISMS	453	621	1.079	5.39*.5	81*.5
TOTAL NO OF TAXA	?	9	1.2		
SHANNON-WEAVER INDEX	1.10	.64	.87		

SITE: 3
 TABLE F-2 cont.
 page 3 of 9

TAXA	REPLICATES	TOTAL	MEAN	STD ERROR	PCT COMP
	1	2			
O- AMPHIPODA (SCUDS)					
HYALELLA AZTECA	0	2	1.0	1.0	0.0
O- DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	1600	2950	4550	2275.0	675.0
CHIRONOMIDAE PUPAE	34	50	84	42.0	8.0
O- EPHemeroptera (MAYFLIES)					
BAETIS SP	0	1	1	*5	*5
CAENIS SP	3	1	4	2.0	1.0
TRICORYTHIDES SP	0	1	1	*5	*5
STENOREMA SP	14	19	33	1.6*5	2.5
TOTAL NO OF ORGANISMS	1651	3024	4675	2337.5	686.5
TOTAL NO OF TAXA	4	7	7		
SHANNON-WEAVER INDEX	.16	.14	.15		

TABLE F-2 cont.

page 4 of 9

SITE: 4

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-MECAPODA (CRAYFISH)	0	1.1	1.1	.5 .5	2 .1
O-ISOPODA (AQUATIC SOIL BUGS) ASELLUS SP	0	2	1.0	.5 .0	1 .9
O-DIPTERA (MIDGES) CHIRONOMIDAE LARVAE CHIRONOMIDAE PUPAE	1.4 0	1.54 0	1.63 .8	.84 .0 .4 .0	31 .4 1 .5
O-EPHEMEROPTERA (MAYFLIES) POTOMANTHUS SP STENONEMA SP	0 1.73	2 1.55	2 3.33	1 .0 1.66 .5	1 .0 11 .5
O-PLECOPTERA (STONE FLIES) PERLESTA SP	2	1	3	1 .5	.5 .6
TOTAL NO OF ORGANISMS	202	333	53.5	26.7 .5	65 .5
TOTAL NO OF TAXA	4	7	7		
SHANNON-MEASER INDEX	.47	.99	.93		



TABLE F-2 cont.

SITE: 5

page 5 of 9

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-COLEOPTERA (BEETLES) F-ELMIDAE	1 0	1	*.5	*.5	0.0
O-DIPTERA (FLIES)					
CHIRONOMIDAE LARVAE	633	1425	2063	1031*.5	393*.5
CHIRONOMIDAE PUPAE	17	22	39	19*.5	2*.5
O-Ephemeroptera (MAYFLIES)					
TRICORYTHODES SP	1	2	3	1*.5	*.5
STENONEMA SP	72	101	173	86*.5	14*.5
O-LEPIDOPTERA (MOTHS)					
LEPIDOPTERA LARVAE	1 0	1	*.5	*.5	0.0
O-PLECOPTERA (STONE FLIES)					
PERLESTA SP	0	1	1	*.5	*.5
O-TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHIDAE PUPAE	5	7	12	6*.0	1*.0
HYDROPSYCHIDAE LARVAE	0	3	3	1*.5	*.5
CHELIATOPSYCHE SP	26	22	48	24*.0	2*.0
HYDROPSYCHE FRISONI	2	0	2	1*.0	*.1
HYDROPSYCHE ORRIS	9	24	33	16*.5	7*.5
TOTAL NO OF ORGANISMS	772	1607	2379	1189*.5	417*.5
TOTAL NO OF TAXA	10	9	12		
SHANNON-MEAGER INDEX	*.70	*.54	*.58		

TABLE F-2 cont.

page 6 of 9

SITE: 6

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-ISOPODA (AQUATIC SOIL BUGS) <i>ASELLUS</i> SP	4	4	4.0	0.0	1.0
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	166	178	344	172.0	6.0
CHIRONOMIDAE PUPAE	5	6	1.3	6.5	1.5
O-EPHEMEROPTERA (MAYFLIES)					
<i>CÆNIUS</i> SP	1	0	1	0.5	0.5
<i>POTOMANTHUS</i> SP	3	2	5	2.5	2
<i>STENOLEMMA</i> SP	32	40	72	36.0	4.0
O-Odonata (DAMSELFLIES)					
<i>ARGIA</i> SP	5	5	1.0	0.0	0.0
O-TRICHOPTERA (CADDISFLIES)					
<i>CHEumatopsyche</i> SP	0	1	1	0.5	0.5
TOTAL NO OF ORGANISMS	216	238	454	227.0	11.0
TOTAL NO OF TAXA	7	7	6		
SHANNON-WEAVER INDEX	.82	.84	.84		

TABLE F-2 cont.

SITE: 7

	TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	FCT COMP
O--AMPHIPODA (SCUDS)						
GAMMARUS SP	1	0	1	*5	*5	*1
HYALELLA AZTECA	1	0	1	*5	*5	*1
O--ISOPODA (AQUATIC SOIL BUGS)						
ASELLUS SP	1	2	3	1.00	*5	*3
O--COLEOPTERA (BEETLES)						
F-ELMIDAE ADULT	0	1	1	*5	*5	*1
F-GYRTINAE	1	0	1	*5	*5	*1
O--DIPTERA (FLIES)						
CHIRONOMIDAE LARVAE	407	463	870	435.0	20.0	69.0
CHIRONOMIDAE PUPAE	15	33	48	24.0	9.0	5.0
O--HEMIPTERA (CHAFERS)						
CAENIS SP	0	1	1	*5	*5	*1
TRICORYTHODES SP	0	1	1	*5	*5	*1
STENONEMA SP	6	23	29	1.40	0.5	0.5
O--ODONATA (DAMSELFLIES)						
ENALLAGMA SP	0	1	1	*5	*5	*1
O--TRICHOPTERA (CADDISFLIES)						
HYDROPSYCHIDAE PUPAE	0	1	1	*5	*5	*1
CHEOMATOSYCHE SP	0	5	5	2.00	2.00	0.5
HYDROPSYCHE FRISONI	0	1	1	*5	*5	*1
HYDROPSYCHE ORRIS	0	5	5	2.00	2.00	0.5
TOTAL NO OF ORGANISMS	432	537	969	464.5	52.5	
TOTAL NO OF TAXA	7	12	15			
SHANNON-BEAUPE INDEX	2.9	3.1	3.0			

TABLE F-2 cont.

page 8 of 9

SITE: 8

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT CONF
O-HIRUDINEA (LEECHES)	1	0	1	*.5	*.1
O-DECAPODA (CRAYFISH)	0	A	A	2*.0	*.5
O-ISOPODIDA (AQUATIC SOIL BUGS)	0	25	25	12*.5	3*.0
O-DIPTERA (WINGES)					
CHIRONOMIDAE LARVAE	51.2	191	70.3	351*.5	34*.9
CHIRONOMIDAE PUPAE	21	6	27	13*.5	3*.3
O-EPHEMEROPTERA (MAYFLIES)					
CAENIS SP	7	2	9	4*.5	2*.5
TRICORYTHOIDES SP	4	1	5	2*.5	1*.5
STERONEMA SP	38	7	45	22*.5	15*.5
O-DIPTERA (DAMSELFLIES)					
ARGIA SP	0	A	A	2*.0	*.5
O-TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHIDAE LARVAE	1	0	1	*.5	*.1
CHEMATOPSYCHE SP	3	0	3	1*.5	*.4
HYDROPSYCHE OERTIS	0	1	1	*.5	*.1
TOTAL NO OF ORGANISMS	587	241	928	414*.0	173*.0
TOTAL NO OF TAXA	6	9	12		
SHAMPTON-BEAVER INDEX	*.55	*.84	*.69		

TABLE F-2 cont.
 SITE: 9

TAXA	REPLICATES	TOTAL NO.	MEAN	STD ERROR	FCT COMP
O-DIPTERA (MIDGES)	1	463	600.5	137.5	90.6
CHIRONOMIDAE LARVAE	22	17	39	19.5	2.5
CHIRONOMIDAE PUPAE					2.9
O-Ephemeroptera (Mayflies)	1	0	1	*5	*1
CAENIS SP	7	0	7	3.5	*5
TRICORYTHODES SP	46	24	70	35.0	*5
STENONEMA SP					5.3
O-Plecoptera (Stone flies)	0	1	1	*5	*5
PERLESTA SP					*1
O-Trichoptera (Caddisflies)	2	0	2	1.0	*2
HYPOTROCHIOAE PUPAE	4	1	5	2.5	*4
CHEIRATOPSYCHE SP					
TOTAL NO OF ORGANISMS	620	606	132.6	663.0	157.0
TOTAL NO OF TAXA	7	5	8		
SHANNON-MEAGER INDEX	.44	.36	.42		

TABLE F-3

Taxa, abundance(number per sampler), diversity, and percent composition of organisms collected on duplicate Hester-Dendy artificial substrates at sites 1 - 5 in the Grand River, Lansing, Michigan, for the exposure period May 21 - August 18, 1976.

SITE: 1

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O--COLEOPTERA (BEETLES)					
F--ELMIDAE	0	1	1	* .5	* 1
F--ELMIDAE ADULT	4	1	* 5	1 * 5	* 4
F--GYRTIDAE	0	1	1	* .5	* 1
O--DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	286	571	857	428 * 5	142 * 5
CHIRONOMIDAE PUPAE	1	4	5	2 * 5	1 * 5
CHIRONOMUS SP	0	4	4	2 * 0	2 * 0
DICROTENDIPIES SP	4	1	* 5	* 5	* 4
STENOCHIRONOMUS SP	0	3	3	1 * 5	1 * 5
ABLAEBESYIA SP	0	5	5	2 * 5	2 * 5
O--EPHEMEROPTERA (MAYFLIES)					
TRICORYTHODES SP	0	1	1	* .5	* 5
STENOREMA SP	2	2	4	2 * 0	0 * 0
O--TRICHOPTERA (CADDISFLIES)					
PYCNOPOXYCHE SP	1	0	0	* .5	* 1
PSYCHOMYIID GENUS A	167	166	353	176 * 5	9 * 5
PSYCHOMYIID GENUS A PUPAE	31	31	39	19 * 5	11 * 5
TOTAL NO OF ORGANISMS	496	768	1284	642 * 0	146 * 0
TOTAL NO OF TAXA	8	13	14		
SHANNON-WEAVER INDEX	* .93	* .79	* .89		

TABLE F-3 cont.

Page 2 of 5

SITE; 2

TAXA	REPLICATES	TOTAL NO	MEAN	STD ERROR	FCT COMP
	1	2			
O--DIPTERA (FLIES)					
CHIRONOMIDAE LARVAE	1.126	1.039	2.217	1.106 * 5	1.9 * 5
CHIRONOMIDAE PUPAE	2	4	6	* 3 * 0	* 3
DICROTENDIPES SP	1	0	1	* 5	0 * 0
GLYPTOTENDIPES SP	1	0	1	* 5	0 * 0
O--Ephemeroptera (MAYFLIES)					
CAENIS SP	2	1	3	1 * 5	* 5
TRICORYTHODES SP	0	1	1	* 5	0 * 0
STENONEEMA SP	9	13	22	1.1 * 0	1 * 0
O--ODONATA (DAMSELFLIES)					
ARGIA SP	0	1	1	* 5	* 5
O--TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHE ORRIS	1	1	2	1 * 0	0 * 0
PSYCHOMYIID GENUS A	2	0	2	1 * 0	1 * 0
TOTAL NO OF ORGANISMS	1.146	1.110	2.256	1.128 * 0	1.8 * 0
TOTAL NO OF TAXA	3	7	10		
SHANNON-MEYER INDEX	* 1.1	* 1.2	* 1.1		

TABLE F-3 cont.

page 3 of 5

SITE: 3

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	FCT COMP
O-ISOPODA (AQUATIC SOIL BUGS) ASELLUS SP	0	1	*.5	*.5	*.3
O-COLEOPTERA (BEETLES) FELTIDAE	1	0	*.5	*.5	*.3
O-DIPTERA (EXCEPT MIDGE) CHAOBORUS SP	0	1	*.5	*.5	*.3
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	121	99	220	140.0	14.0
CHIRONOMIDAE PUPAE	2	1	3	1.5	1.0
GLYPHTONIDIOPSES SP	0	3	3	1.5	1.0
PARACLADOPELMA SP	1	0	1	.5	.3
THIENEMANNIA SP	0	22	22	14.0	14.0
O-EPHEMEROPTERA (MAYFLIES)					
CAERETS SP	0	1	1	*.5	*.3
TRICORYTHODES SP	1	0	1	*.5	*.3
STENONEMA SP	2	1	3	1.5	1.0
O-LEPIDOPTERA (MOTHS)					
	1	0	1	*.5	*.3
O-TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHIDAE PURAE	15	0	15	7.5	7.5
HYDROPSYCHE ORRIS	11	4	15	7.5	7.5
TOTAL NO OF ORGANISMS	155	133	288	144.0	11.0
TOTAL NO OF TAXA	9	9	14		
SHANNON-MEAGER INDEX	*.85	*.89	*.99		



TABLE F-3 cont.

SITE: 4

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
0--COLEOPTERA (BEETLES)					
F--ELMIDAE ADULT	0	1	1	*.5	0,0
F--GYRTIDAE	0	1	1	*.5	0,0
0--DIPTERA (MIDGES)					
CHIRONOMIDAE LARVAE	2369	1830	4199	2099.5	269.5
CHIRONOMIDAE PUPAE	1	11	12	6,0	5,0
GLYPHTOTENDIPES SP	0	5	5	2,5	2,5
0--OEHEMEROPTERA (MAYFLIES)					
TRICORYTHODES SP	1	0	1	*.5	0,0
STEMONEEMA SP	2	3	1.5	2,5	2,5
0--TRICHOPTERA (CADDISFLIES)					
HYDROPSYCHE ORVIS	1	0	1	*.5	0,0
PSYCHOMYIID GENUS A	3	67	70	35,0	32,0
TOTAL NO OF ORGANISMS	2377	1918	4295	2147.5	229.5
TOTAL NO OF TAXA	6	7	9		
SHANNON-BEAVER INDEX	*.03	*.23	*.13		

TABLE F-3 cont.

page 5 of 5

SITE: 5

TAXA	REPLICATES 1 2	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-COLEOPTERA (BEETLES) F-ELATIDAE ADULT	0	1	.5	.5	.2
O-DIPTERA (EXCEPT MIDGE) CHAOBORUS PUPAE	1	0	.5	.5	.2
O-DIPTERA (MIDGES)					
CHIRONOMIDAE LARVÆ	258	354	61.2	30.6.0	95.0
CHIRONOMIDAE PUPÆ	5	8	1.3	6.5	2.0
DICROTENOIDES SP	3	0	3	1.5	.5
GLYPHTONIDIUS SP	1	0	1	.5	.2
O-Ephemeroptera (MAYFLIES)					
STENONEURA SP	1	7	1	4.0	1.2
O-Odonata (DAMSELFLIES)					
ARGIA SP	4	1	5	2.5	.8
TOTAL NO OF ORGANISMS	273	371	64.4	32.2.0	47.0
TOTAL NO OF TAXA	7	5	3		
SHANNON-WEAVER INDEX	.30	.23	.27		

TABLE F-4

Taxa, abundance(number/m²), diversity, and percent composition of organisms collected in triplicate ponar grab samples taken on May 21, 1976, at zones 1 - 9 in the Grand River, Lansing, Michigan.

ZONE: 1

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN/ STD ERROR	P. % COMP
C-OLIGOCHAETA (AQUATIC EARTHWORMS)	1 2	3			
O 0	3	2	5	1.7	31.9
F-TUBIFICIDAE	7 0	0	7	2.3	44.6
O-DIPTERA (EXCEPT MIDGEES)	0 0	1	1	*3	6.4
CHAOBORUS SP					*3
O-DIPTERA (MIDGEES)					1.0
PROCLADUS SP	38	22	26	8.6	23.7
TOTAL NO OF ORGANISMS	45	25	29	9.9	33.0
TOTAL NO OF TAXA	2	2	3	4	631.3
SHANNON-MEASER INDEX	*4.3	*37	*40	*51	

TABLE F-4 cont.

ZONE: 2

TAXA	1	2	3	TOTAL NO	MEAN	MEAN / STD. ERROR	PCT COMP
C-OLIGOCHAE TA CILIARIA EARTHWORMS)							
O-DIPTERA (MIDGE)	0	7	5	12	4.0	76.5	2.1
CHIRONOMIDAE PUPAE	1	0	0	1	.3	.6.4	.3
POLYPEDILUM SP	0	1	0	1	.3	.6.4	.3
PROCLANIUS SP	2	12	4	18	.6.0	1.14.8	.3.1
ABLAESMYIA SP	0	1	0	1	.3	.6.4	.3
O-EPEMEROPTERA (MAYFLIES)	0	1	0	1	.3	.6.4	.3
CAENIS SP							2.9
O-LEPIDOPTERA (MOTHS)	0	0	1	1	.3	.6.4	.3
TOTAL NO OF ORGANISMS	3	22	10	35	11.7	22.3.2	
TOTAL NO OF TAXA	2	5	3	7			
SHANNON-WEAVER INDEX	.64	1.12	.94	1.22			

TABLE F-4 cont.

page 3 of 9

ZONE: 3

TAXA	REPLICATES	TOTAL NO.	MEAN / SQ M	STD ERROR	PCT COMP
O-OLIGOCHAETA (QUATIC EARTHWORMS)					
BRANCHIURA SOWERBYI	1	2	5	1.7	31.9
	0	0	2	.7	12.8
O-DIPTERA (EXCEPT MIDGE)	0	0	1	.3	6.4
SIMULIIDAE LARVAE					
O-DIPTERA (MIDGES)	2	0	3	1.0	12.1
CHIRONOMIDAE PUPAE	0	0	2	.7	12.8
T-CHIRONOMINI	1	0	3	1.3	25.5
CYPTOCHIRONOMUS SP	1	2	0	1.0	19.1
DICROTENDIPES SP	1	4	1	.7	2.3
GLYPHTOTENDIPES SP	2	4	1	.7	4.6
POLYPEDILUM SP	1	0	2	.7	12.8
RHEOTANYTARSUS SP	4	1	2	.3	4.6
CRICOTOPUS SP	0	1	0	.1	.3
ABLAESMYIA SP	3	3	4	1.0	33.3
THIENEMANNIYA GP	1	2	1	.4	1.3
O-EPIHEMEROPTERA (MAYFLIES)					
PSEUDOCOLEON SP	0	1	1	2	.7
BAETISCA BAJKOVI	1	0	0	.1	.3
O-TRICHOPTERA (CADDISFLIES)					
CHEONATOZYCHE SP	0	1	0	1	.3
HYDROPSYCHE AERATA	0	1	0	.1	.3
O-HETERODONYA (FINGERWATL GLAMS)					
PISIDIUM SP	1	2	0	.3	1.0
Sphaerium SP	2	2	3	.7	2.3
TOTAL NO OF ORGANISMS	20	22	24	.6	22.0
TOTAL NO OF TAXA	12	12	13	.9	19
SHANNON-WEAVER INDEX	2.35	2.37	2.44	.70	2.70



WAPORA

TABLE F-4 cont.

page 4 of 9

ZONE: 4

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN / SQ M	STD ERROR	PCT COMP
	1 2 3					
O-TURELLARIA (FLANÉRIAMS)	1 0 0	0 2 3	0 4 4	.3 6.4	.3 .3	.5
O-OLIGOCHAETA (AQUATIC EARTHWORMS)	3 0 0	47 6 0	88 8 2	561.1 51.0 12.8	13.4 2.7 .7	44.7 4.1 1.0
O-BRANCHIURA SOMERBYI	0	2	0	.7	.7	
O-LUMERICULIDAE	0	0	0			
O-ISOPODA (AQUATIC SOIL BUGS)	4	0	0	1.3	25.5	2.0
AESELIUS SP						
O-DIPTERA (EXCEPT MIDGES)	2	0	0	.7	12.6	.7
SIMULIIDAE LARVAE						
O-DIPTERA (MIDGES)	1 0 0 1 1 2 14 1 0 0 0	0 0 1 0 1 0 0 0 1 54 1 0	1 2 1 2 3 0 15 2 59 1 1	.3 7 3 7 1.0 5.0 95.6 7 19.7 3 1 .3	6.4 12.6 6.4 12.6 19.1 4.5 7.6 3 17.2 29.9 6.4 .3	.5 1.0 .5 1.0 1.5 1.5 7.6 3 2.0 .5
CHIRONOMIDAE PUPAE						
CHIRONOMUS SP						
CRYPTOCHEIRONOMUS SP						
GLYPHTOTENDIPES SP						
POLYPENTIUM SP						
RHEOTANYTARSUS SP						
CRICOTOFUS SP						
PROCLADUS SP						
THIENERMANIYA GP						
O-EPEIEMOPTERA (MAYFLIES)	0	1	0	1	.3	.5
F-BEETLEIDAE						
PSEUDOCOLEON SP	2	0	0	2	12.8	.7
POTOMANTHUS SP	1	0	0	1	.3	.5
O-TRICHOPTERA (CADDISFLIES)	1 0	0 1	0 0	1 1	.3 .3	.5 .5
CHELMATOPSYCHE SP						
HYDROPSYCHE ORRIS						
TOTAL NO OF ORGANISMS	33	51	113	197	65.7	125.6.1
TOTAL NO OF TAXA	12	9	6	20		
SHANNON-MEAKER INDEX	1.98	1.04	1.06	1.68		

TABLE F-4 cont.
 ZONE: 5

page 5 of 9

ZONE: 5

TAXA	REPLICATES	TOTAL NO.	MEAN	MEAN/ SD N	STD ERROR	PCT COMP
C-OLIGOCHAETA (ACQUATIC EARTHWORMS)						
O-DIPTERA (MIDGEES)	4	9	1.9	6.3	1.21 .2	1.45
PROCLADUS SP	3	6	1.0	3.3	6.3 .3	1.45
O-HETERODONTA (FINGERNAIL CLAMS)	0	1	0	1	.3	33 .3
Sphaerium sp	0	1	0	1	.3	3 .3
TOTAL NO OF ORGANISMS	9	11	1.0	3.0	1.0 .0	191 .3
TOTAL NO OF TAXA	2	3	.2	.3		
SHANNON-MEYER INDEX	.64	.92	.33	.77		

TABLE F-4 cont.

page 6 of 9

ZONE: 6

TAXA	REPLICATES	TOTAL NO	MEAN SQ N	STD ERROR	FCT COMP
	1 2 3				
O--OLIGOCHÄETA (AQUATIC EARTHWORMS)	1 9	4	1 24	0 153.0	3.6 33.7
O--ISOPODA (AQUATIC SOIL BUGS)	0	1	0	0 6.4	0 3
O--ASELLUS SP	0	1	0	0 6.4	0 3
O--DIPTERA CHILOPS	0	1	0	0 6.4	0 3
O--CRYPTOCHIRONOMUS SP	0	1	0	0 6.4	0 3
O--HETEROCONTA (FINGERNAIL CLAMS)	1	0	0	0 6.4	0 3
O--SPHAERIIDAE	0	1	0	0 6.4	0 3
P--STIDIUM SP	0	1	0	0 6.4	0 3
TOTAL NO OF ORGANISMS	20	7	1 23	0.3 1.78.5	
TOTAL NO OF TAXA	2	4	1 5		
SHANNON-WEINER INDEX	20	1.15	0.00 0.61		

TABLE F-4 cont.

page 7 of 9

ZONE: 7

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN / STD ERROR	PCT COMP
	1 2	3			
C-OLIGOCHAETA (AQUATIC EARTHDORMS)					
36	35	40	1.1	37.0	707.8
O-DIPTERA (MIDGEES)					
CRYPTOCHIRONOMUS SP	2	0	1	1.0	1.6
PROCLADUS SP	17	29	56	1.02	650.4
O-HETERODONTA (FINGERNAIL CLAMS)					
F-SPHAERIIDAE	1	0	0	1	6.4
PISTIDIUM SP	5	1	0	6	*,3
Sphaerium SP	6	2	2	1.0	3.3
TOTAL NO OF ORGANISMS	67	67	99	233	77.7
TOTAL NO OF TAXA	6	4	4	6	
SHANNON-MEAWER INDEX	1.26	.87	.81	1.02	

TABLE F-4 cont.

ZONE: 8

page 8 of 9

TAXA	REPLICATES	TOTAL NO.	MEAN	MEAN / SD N	STD ERROR	PCT COMP
	1	2	3			
O-Oligochaeta (AQUATIC EARTHWORMS)	45	39	37	42.1	40.3	77.1 + .5
O-Diptera (Midges)	0	1	0	1	.3	.6 + .4
Chironomidae pupae	39	75	56	170	56 + .7	103.4 + 0
Procladotus sp						
O-Heterodontia (FINGERMILL CLAMS)	0	1	0	1	.3	.6 + .4
Pisidium sp	0	0	1	1	.3	.3 + .3
Sphaerium sp						
TOTAL NO OF ORGANISMS	64	116	94	29.4	98 + 0	187.4 + 6
TOTAL NO OF TAXA	2	4	3	.5		
SHANNON-MEASER INDEX	.69	.73	.72	.74		

TABLE F-4 cont.
 ZONE: 9
 page 9 of 9

TAXA	REPLICATES	TOTAL NO.	MEAN	MEAN / STD. ERROR	FCT COMP
C—OLIGOCHAETA (AQUATIC EARTHWORMS)	1	2	3		
1.1	36	25	72	24.0	459.1
O—DIPTERA (MIDGES)					
CHIRONOMUS SP	0	1	1	2	1.2, 8
PROCLADUS SP	40	71	24	1.35	45.0
O—HETEROCONTA (FINGERNAIL CLAMS)					
Sphaerium sp	2	0	0	2	7
TOTAL NO OF ORGANISMS	53	106	50	21.1	70.3
TOTAL NO OF TAXA	3	3	3	4	
SHANNON-MEYER INDEX	.66	.69	.76	.74	

TABLE F-5

Taxa, abundance(number/m²), diversity, and percent composition of organisms collected in triplicate Ponar grab samples taken on June 21, 1976, at zones 1 - 9 in the Grand River, Lansing, Michigan.

ZONE: 1

TAXA	REPLICATES			TOTAL NO	MEAN	MEAN/ SD N	STD ERROR	PCT COMP
	1	2	3					
C-OLIGUCHAEIA (AQUATIC EARTHWORMS)								
0-DIPTERA (MIDGEES)	1	1	2	4	1.3	205.5	.3	44.4
CHIRONOMIDAE PUPAE	1	0	0	1	1	6.4	.3	11.1
PROCLADUS SP	1	2	1	4	1.3	205.5	.3	44.4
TOTAL NO OF ORGANISMS	3	3	3	9	3.0	57.4		
TOTAL NO OF TAXA	3	2	2	3				
SHANNON-MEAYER INDEX	1.10	.64	.64	.96				

TABLE F-5 cont.

page 2 of 9

ZONE: 2

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN / SQ M	STD ERROR	PCT COMP
O-Oligochaeta (AQUATIC EARTHWORMS)	1 2 3	1 2	*7	1.2 *3	*3	1 *3
O-DIPTERA (EXCEPT MINGES)	0 2 0	2 0	4 2	1 *3 *7	*7	3 *7
BEZZIA SP	0	2				1 *3
CHAOBORUS SP	2	0				
O-DIPTERA (MINGES)	0 0 0	1 1 1	*3 *3 *3	6 *4 6 *4 6 *4	*3 *3 *3	*9 *9 *9
CHIRONOMUS SP	1	0				
CRYPTOCLAUSPELMA SP	1	0				
POLYPEDILUM SP	51	1.4	33	96	32 *7	624 *9
PROCLADUS SP						
TOTAL NO OF ORGANISMS	56	1.6	37	109	36 *3	695 *0
TOTAL NO OF TAXA	5	2	4	7		
SHANNON-WEAVER INDEX	*42	*38	*45	*49		

TABLE F-5 cont.

page 3 of 9

ZONE: 3

TAXA	REPLICATES			TOTAL NO	MEAN	MEAN/ SD N	STD ERROR	PCT COMP
	1	2	3					
G-Oligochaeta (AQUATIC EARTHWORMS)	0	7	1	8	2.7	51.0	2.2	61.3
O-Diptera (EXCEPT MIDGEES) BEZZIA SP	0	1	0	1	1	6.4	*3	7.7
O-Diptera (MIDGEES) CRYPTOCHIRONOMUS SP PROCLADUS SP	0	1	1	2	7	12.0	*3	15.4
O-Heterodonta (FINGER MIL CLEMS) PISTIOTUM SP	0	1	0	1	3	6.4	*3	7.7
TOTAL NO OF ORGANISMS	0	11	2	13	4.3	6.4	*3	7.7
TOTAL NO OF TAXA	0	5	2	5				
SHANNON-WEAVER INDEX	0.00	1.16	.69	1.19				

TABLE F-5 cont.

ZONE: 4

TAXA	1	2	3	REPLICATES	TOTAL NO	MEAN	MEAN / STD. ERROR	STD. ERROR	PCT COMP
O-OLIGOCHETA (AQUATIC EARTHWORMS)	1.6	2.3	2.4	63	21.0	401.7	2.5	26.1	
BRACHIURA SUMERBYI	4	1	6	11	3.7	70.1	1.5	4.6	
O-COLEOPTERA (BEETLES)			0	1					
F-ELMIDAE									
O-DIPTERA (EXCEPT MIDGE)									
BEZZIA SP	1.2	1.0	6	23	9.3	173.5	1.0	11.6	
O-DIPTERA (MIDGE)									
CHIRTONOMUS SP	0	0	2	2	7	12.8	.7	.8	
CRYPTOCHIRONOMUS SP	0	7	1	8	2.7	51.0	2.2	3.3	
DICROTENDIPES SP	0	1	0	1	3	6.4	.3	.4	
LEPTOCHIRONOMUS SP	0	1	1	2	7	12.8	.3	.8	
PARAACLADOPELMA SP	0	1	0	1	3	6.4	.3	.4	
POLYPEDILUM SP	0	0	1	1	3	6.4	.3	.4	
PROCLADUS SP	3.2	2.5	5.3	11.5	38.3	733.3	10.0	47.7	
O-EPEHEMEROPTERA (MAYFLIES)									
CENTROPTILUM SP	0	1	0	1	3	6.4	.3	.4	
CAENIS SP	1	0	0	1	3	6.4	.3	.4	
HEXAGENIA SP	2	1	0	3	1.0	19.1	.6	1.2	
O-HETERODONTA (FINGERMILL GLAMS)									
PISIDIUM SP	1	2	0	3	1.0	19.1	.6	1.2	
TOTAL NO OF ORGANISMS	69	73	99	241	30.3	1536.7			
TOTAL NO OF TAXA	6	11	9						
SHANNON-MEASER INDEX	1.45	1.68	1.21						
SHANNON-MEASER INDEX	1.45	1.68	1.53						

TABLE F-5 cont.

ZONE: 5 page 5 of 9

TAXA	1	REPLICATES	3	TOTAL NO	MEAN	MEAN / SD N	STD ERROR	PCT COMP
C-OLIGOCHAETA (AQUATIC EARTHWORMS)	1	3	4	8	2.7	51.0	.9	57.1
O-DIPTERA (MIDGES)								
CRYPTOCHIRONOMUS SP	1	0	0	1	*3	6.4	.3	7.1
PROCLADUS SP	0	1	1	2	*7	12.8	.3	14.3
O-HETERODONTIA (FINGERMILL CLAMS)								
F-SPHAERTIDAE	0	0	0	1	*3	6.4	.3	7.1
PISIDIUM SP	1	0	0	1	*3	6.4	.3	7.1
SPHAERIUM SP	1	0	0	1	*3	6.4	.3	7.1
TOTAL NO OF ORGANISMS	4	4	6	14	4.7	89.3		
TOTAL NO OF TAXA	4	2	3	6				
SHANNON-MEYER INDEX	1.39	.56	.87	1.35				

TABLE F-5 cont.

page 6 of 9

ZONE: 6

TAXA	REPLICATES	TOTAL NO	MEAN SQ N	STD ERROR	PCT COMP
	1 2	3			
O-OLIGOCHAETA (AQUATIC EARTHWORMS)					
5	3	3	1.1	3.7	70.1
O-ISOPODA (AQUATIC SOIL BUGS)					
ASELLUS SP	0	0	0	0.3	6.4
O-DIPTERA (FLIES)					
PROCLATIOS SP	3	0	0	3	1.0
O-HETERODONTA (FINGERMAIL CLAMS)					
PISTIDIUM SP	2	3	0	5	1.7
TOTAL NO OF ORGANISMS	1.0	7	3	20	6.7
TOTAL NO OF TAXA	3	3	1	4	31.9
SHANNON-MEAWER INDEX	1.03	1.00	0.00	1.11	25.0

TABLE F-5 cont.

page 7 of 9

ZONE: 7

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN/ STD. ERROR	FCT COMP
C-OLIGOCHAEIA (AQUATIC EARTHWORMS)	1	2	99	33.0	6.7
D-DIPTERA (EXCEPT MIDGEES)	45	32	22	79.0	79.0
D-DIPTERA (EXCEPT MIDGEES)	4	1	2	4	1.3
O-DIPTERA (MIDGEES)	4	1	1	1.0	3.5
O-DIPTERA (MIDGEES)	0	0	0	0.0	0.0
O-DIPTERA (MIDGEES)	5	3	7	1.5	1.2
O-HETERODONTIA (FINGERWAILL. CLAMS)	0	0	2	2.0	1.2
O-HETERODONTIA (FINGERWAILL. CLAMS)	0	0	0	0.0	0.0
O-PISTIDIUM SP	0	3	0	0.0	0.0
O-SPHAERIUM SP	0	3	0	0.0	0.0
TOTAL NO OF ORGANISMS	51	34	41.3	790.7	
TOTAL NO OF TAXA	3	4	5	6	
SHANNON-WEAVER INDEX	.42	.65	1.04	.74	2.4

TABLE F-5 cont.
 page 8 of 9

ZONE: 8

TAXA	REPLICATES	TOTAL NO.	MEAN	STD ERROR	PCT COMP
	1 2 3				
O-OLIGochaeta (AQUATIC EARTHWORMS)	15	20	1.3		
O-DIPTERA (EXCEPT MIDGEES)	3	3	4	1.0	2.1
O-BEZIA SP					50.5
O-DIPTERA (MIDGES)					
CHIRONOMUS SP	1	0	0	1	1.1
CRICOTOPUS SP	0	1	0	1	1.1
PROCLADUS SP	1.3	1.2	7	3.2	33.7
O-HETEROZOON (FINGERNAIL CLAMS)					
PISIDium SP	3	0	0	3	1.0
TOTAL NO OF ORGANISMS	35	36	2.4	.93	31.7
TOTAL NO OF TAXA	5	4	3	.6	60.6
SHANNON-MEAVER INDEX	1.25	1.00	.99	1.15	

TABLE F-5 cont.

page 9 of 9

ZONE: 9

TAXA	REPLICATES	TOTAL NO	MEAN	MEAN / SD H	STD ERROR	PCT COMP
O-Oligochaeta (AQUATIC EARTHWORMS)						
0-OPTERA (EXCEPT MINGES) BEZZIA SP	2	1	4	1.3	.25-.5	.3
0-OPTERA (MINGES)						
CHIRONOMIDAE PUPAE	0	1	0	1	.3	.3
CHIRONOMUS SP	1	2	1	4	1.3	.3
PROCLADUS SP	12	26	1.0	4.8	1.6-.9	.3
TAXYPIUS SP	1	0	1	2	.7	.3
0-HETERODONTA (FINGERWAL CLAMS) PISTIDIUM SP	0	1	0	1	.3	.3
TOTAL NO OF ORGANISMS	25	58	2.3	1.06	.35-.3	.3
TOTAL NO OF TAXA	5	6	.5	.7		
SHANNON-MEYER INDEX	1.16	1.04	1.13	1.13		

APPENDIX G
TABLE NO.
PAGE

G-1	Electrofishing, Zones 1-9, September, 1975	1G
G-2	Electrofishing, Zones 3-9, February, 1976	10G
G-3	Electrofishing, Zones 1-9, March, 1976	17G
G-4	Electrofishing, Zones 1-9, April, 1976	26G
G-5	Electrofishing, Zones 1-9, May, 1976	35G
G-6	Electrofishing, Zones 1-9, June, 1976	44G
G-7	Electrofishing, Zones 1-9, July, 1976	53G
G-8	Electrofishing, Zones 1-9, August, 1976	62G
G-9	Electrofishing, Zones 1-9, Sept, 75 - Aug, 76 (no Feb)	71G
G-10	Electrofishing, Zones 1-9, Sept, 75 - Aug, 76	80G
G-11	Frame Netting, Zones 1,3,4,7-9, October, 1975	89G
G-12	Frame Netting, Zones 1,3,4,7-9, April, 1976	95G
G-13	Frame Netting, Zones 1,3,4,7-9, May, 1976	101G
G-14	Frame Netting, Zones 1,3,4,7-9, June, 1976	107G
G-15	Frame Netting, Zones 1,3,4,7-9, Oct,75 - Jun, 76	113G
G-16	Gill Netting, Zones 1,3,4,7-9, September, 1975	119G
G-17	Gill Netting, Zones 1,3,4,7-9, April, 1976	125G
G-18	Gill Netting, Zones 1,3,4,7-9, May, 1976	131G
G-19	Gill Netting, Zones 1,3,4,7-9, June, 1976	137G
G-20	Gill Netting, Zones 1,3,4,7-9, Sept, 75 - Jun, 76	143G

TABLE G-1

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during September, 1975.

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO
CARP	12	25200	0	0	0	12	10.0
BLUNTNOSSE MINNOW	41	72	41	0	0	0	34.2
WHITE SUCKER	1	7	1	0	0	0	0.0
GOLDEN REDHORSE	1	700	0	0	0	1	.8
BROOK SILVERSIDE	10	20	10	0	0	0	8.3
GREEN SUNFISH	12	101	11	1	0	0	10.0
PUMPKINSEED	4	87	2	2	0	0	3.3
BLUEGILL	30	125	30	0	0	0	25.0
SMALLMOUTH BASS	1	10	1	0	0	0	.8
LARGEMOUTH BASS	7	534	3	3	0	1	5.8
LOPERCH	1	3	1	0	0	0	0.0
TOTALS	120	26859	100	6	0	14	
TOTAL SPECIES	11						30.0
SAMPLING TIME (MIN)	40						6.71

* FISH/10 MIN OF EFFORT
 KG/10 MIN OF EFFORT

TABLE G-1 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			FCT COMP BY NO	COMP BY WT
			0-8	>8-16	>16-24		
CARP	7	10000	0	0	0	7	6.8 85.3
BLUNTNOSE MINNOW	13	34	1.3	0	0	0	12.6 .3
GOLDEN REDHORSE	1	800	0	0	0	1	1.0 6.8
YELLOW BULLHEAD	1	45	0	1	0	0	1.0 .4
BROOK SILVERSIDE	8	1.2	8	0	0	0	7.8 .1
GREEN SUNFISH	52	451	4.6	6	0	0	50.5 3.8
PUMPKINSEED	4	64	2	2	0	0	3.9 .5
BLUEGILL	12	66	1.1	1	0	0	11.7 .6
LARGEMOUTH BASS	4	68	1	3	0	0	3.9 .6
BLACK CRAPPIE	1	185	0	0	1	0	1.0 1.6
TOTALS	103	11725	61	13	1	8	
TOTAL SPECIES SAMPLING TIME (MIN)	10	40	# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT			25.7	2.93

TABLE G-1 cont.

page 3 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE:
 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY NO WT	
			0-6	>6-16	>16-24	>24	
CARP	11	46000	0	0	0	11	9.0 65.9
SAND SHINER	42	117	42	0	0	0	34.4 .2
BLUNTNOSE MINNOW	32	112	32	0	0	0	26.2 .2
NORTHERN HOG SOCKER	2	358	1	0	0	1	1.6 .7
GOLDEN REDHORSE	5	2143	0	0	0	5	4.1 4.0
BROOK SILVERSIDE	5	9	5	0	0	0	4.1 0.0
PUMPKINSEED	2	105	0	2	0	0	1.6 .2
BLUEGILL	2	62	0	2	0	0	1.6 .2
LARGEMOUTH BASS	16	4261	0	4	9	3	13.1 8.0
BLACK CRAPPIE	4	248	1	2	1	0	3.3 .5
LOGGERHEAD	1	90	0	1	0	0	.8 .2
TOTALS	122	53525	81	11	10	20	
TOTAL SPECIES SAMPLING TIME (MIN)	11						* FISH/10 MIN OF EFFORT
	40						KG/10 MIN OF EFFORT
							30.5 13.38

TABLE G-1 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			>24	FCT NO	COMP BY WT
			0-8	>8-16	>16-24			
CARP	6	24600	0	0	0	6	10,3	87,3
BLUNTNOSE MINNOW	3	5	3	0	0	0	5,2	0,0
WHITE SUCKER	1	7	1	0	0	0	1,7	0,0
SPOTTED SUCKER	5	2501	1	0	0	4	8,6	8,9
GOLDEN REDHORSE	1	435	0	0	0	1	1,7	1,5
BROOK SILVERSIDE	9	13	9	0	0	0	15,5	0,0
GREEN SUNFISH	9	150	7	2	0	0	15,5	.5
PUMPKINSEED	10	241	3	7	0	0	17,2	.9
BLUEGILL	8	39	7	1	0	0	13,8	.1
LARGEMOUTH BASS	5	160	2	3	0	0	8,6	.6
GREEN X PUMPKINSEED	1	28	0	1	0	0	1,7	.1
TOTALS	58	28179	33	14	0	11		
TOTAL SPECIES SAMPLING TIME (MIN)	11						4 FISH/10 MIN OF EFFORT	14,5
	40						KG/10 MIN OF EFFORT	7,04

TABLE G-1 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
NORTHERN PIKE	1	85	0	0	1	0
CARP	6	24600	0	0	0	6
SAND SHINER	2	2	2	0	0	0
BLUNTNOSE MINNOW	7	8	7	0	0	0
SPOTTED SUCKER	3	1298	0	1	0	2
BROOK SILVERSIDE	1	1	0	0	0	0
GREEN SUNFISH	7	73	6	1	0	0
PUMPKINSEED	3	84	0	3	0	0
BLUEGILL	17	49	17	0	0	0
LARGEMOUTH BASS	13	916	7	3	2	1
BLACK CRAPPIE	1	38	0	1	0	0
TOTALS	61	27156	40	9	3	9
TOTAL SPECIES SAMPLING TIME (MIN)	11	40	* FISH/10 MIN OF EFFORT			15.2
			KG/10 MIN OF EFFORT			6.79

TABLE G-1 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			>24 NO	FCT WT	COMP ERY NO
			0-8	>8-16	>16-24			
NORTHERN PIKE	1	109	0	0	1	0	1.4	6.7
CARP	1	490	0	0	0	1	1.4	30.1
SAND SMINER	1	2	1	0	0	0	1.4	1
BLUNTNOSE MINNOW	11	19	11	0	0	0	15.9	1.2
WHITE SUCKER	2	1.2	2	0	0	0	2.9	.7
SPOTTED SUCKER	2	1.1	2	0	0	0	2.9	.7
BROOK SILVERSTIDE	3	5	3	0	0	0	4.3	.3
GREEN SUNFISH	16	446	9	6	0	0	23.2	27.4
PUMPKINSEED	4	136	1	3	0	0	5.8	8.3
BLUEGILL	21	239	16	3	0	0	30.4	14.7
LARGEMOUTH BASS	6	141	1	5	0	0	8.7	8.7
GREEN X BLUEGILL	1	20	1	0	0	0	1.4	1.2
TOTALS	69	1630	48	19	1	1		
TOTAL SPECIES SAMPLING TIME (MIN)	1.2						# FISH/10 MIN OF EFFORT	17.2
	40						KG/10 MIN OF EFFORT	.41

TABLE G-1 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO		PCT COMP BY WT	
			0-8	>8-16	>16-24	>24			
BLUNTNOSE MINNOW	3	3	3	0	0	0	0	7.1	.4
WHITE SUCKER	1	335	0	0	0	1	1	2.4	41.4
SPOTTED SUCKER	1	9	1	0	0	0	0	2.4	1.1
BROOK SILVERTIDE	18	24	18	0	0	0	0	42.9	3.0
GREEN SUNFISH	13	339	8	5	0	0	0	31.0	41.9
PUMPKINSEED	3	75	2	1	0	0	0	7.1	.3
BLUEGILL	2	5	2	0	0	0	0	4.8	.6
LARGEMOUTH BASS	1	20	0	1	0	0	0	2.4	2.5
TOTALS	42	610	34	7	0	1			
TOTAL SPECIES		8					# FISH/10 MIN OF EFFORT	10.5	
SAMPLING TIME (MIN)		40					KG/10 MIN OF EFFORT		.20

TABLE G-1 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: September 10, 15 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			FCT NO	COMP BY WT
			0-8	>8-16	>16-24		
CARP	1	1500	0	0	0	1	.7
SAND SHINER	1	9	1	0	0	0	.7
BLUNTNOSE MINNOW	17	32	17	0	0	0	.3
WHITE SUCKER	1	19	0	1	0	0	1.2
BROOK SILVERSTIDE	31	41	31	0	0	0	.7
GREEN SUNFISH	43	54.6	38	5	0	0	1.5
PUMPKINSEED	7	2.64	5	2	0	0	20.3
BLUEGILL	29	1.61	2.6	3	0	0	9.8
LARGEMOUTH BASS	7	1.13	3	4	0	0	6.0
TOTALS	137	2685	121	15	0	5.1	4.2
TOTAL SPECIES SAMPLING TIME (MIN)	9	* FISH/10 MIN OF EFFORT			34.2	KG/10 MIN OF EFFORT	
	40	**			6.7		

TABLE G-1 cont. page 9 of 9

METHOD: Electrostimulation
DATE: September 10, 15 (combined)
ZONE: 9

TABLE G-2

Summary of electrofishing in the Grand River at fishing zones 3 through 9 during February, 1976.

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-3	>3-16	>16-24		
GOLDFISH	1	740	0	0	1	1.7	.7
CARP	35	98200	0	0	35	60.3	93.7
BLUNTNOSE MINNOW	1	1	1	0	0	1.7	0.0
GOLDEN REDHORSE	5	3220	0	0	1	4	8.6
ROCK BASS	4	403	0	3	0	1	6.9
PUMPKINSEED	4	281	0	3	1	0	6.9
BLODEGILL	2	140	0	2	0	0	3.4
LARGEMOUTH BASS	2	590	0	0	2	0	3.4
BLACK CRAPPIE	4	1240	0	0	4	0	6.9
TOTALS	58	104815	1	8	8	41	
TOTAL SPECIES	9						
SAMPLING TIME (MIN)	40						
				# FISH/10 MIN OF EFFORT		1.4, 5	
				KG/10 MIN OF EFFORT		26, 20	

TABLE G-2 cont.

page 2 of 7

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT NO
			0-8	>8-16	>16-24		
NORTHERN PIKE	1	1,000	0	0	0	1	4,5
CARP	4	1,1600	0	0	0	4	16,2
SAND SHINER	6	13	6	0	0	0	27,3
BLUNTNOSE MINNOW	1	2	1	0	0	0	4,5
SPOTTED SUCKER	1	560	0	0	0	1	4,5
BROOK SLOVERSIDE	1	1	1	0	0	0	4,5
GREEN SUNFISH	1	32	0	1	0	0	0
PUMPKINSEED	1	28	0	1	0	0	4,5
BLUEGILL	3	37	2	1	0	0	13,6
LARGEMOUTH BASS	2	398	0	1	1	0	9,1
BLACK CRAPPIE	1	230	0	0	1	0	4,5
TOTALS	22	1,3902	10	4	2	6	
TOTAL SPECIES SAMPLING TIME (MIN)	11						# FISH/10 MIN OF EFFORT
	40						KG/10 MIN OF EFFORT
							5,5
							5,48



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TABLE G-2 cont.

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 5

page 3 of 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCT BY WT	COMP BY WT
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	1	505	0	0	0	1	*4	29.6
COMMON SHINER	14	112	14	0	0	0	5.4	*7
SPOTTAIL SHINER	2	2	2	0	0	0	*8	*1
SPOTFIN SHINER	67	53	67	0	0	0	25.9	3.1
SAND SHINER	41	32	41	0	0	0	15.8	1.9
MIMIC SHINER	4	1	4	0	0	0	1.5	*1
BLUNTNOSE MINNOW	92	194	92	0	0	0	35.5	11.4
SPOTTED SUCKER	1	638	0	0	0	1	*4	37.4
BROOK SILVERSIDE	13	22	13	0	0	0	5.0	1.3
ROCK BASS	1	14	1	0	0	0	*4	*8
GREEN SUNFISH	10	33	10	0	0	0	3.9	4.9
PUMPKINSEED	1	22	0	1	0	0	*4	1.3
BLUEGILL	6	64	5	1	0	0	2.3	3.8
LARGEMOUTH BASS	3	51	2	1	0	0	1.2	3.0
GREEN X BLUEGILL	3	6	3	0	0	0	1.2	*4
TOTALS	259	1703	254	3	0	2	-	-
TOTAL SPECIES SAMPLING TIME (MIN)	15	40	* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT				64.7	43



TABLE G-2 cont.

page 4 of 7

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO WT
SPOTFIN SHINER	12	1.3	1.2	0	0	0	25.0 1.1*
BLUNTNOSE MINNOW	3	2	3	0	0	0	6.3 2.1
BROOK SILVERSTONE	14	2.4	1.4	0	0	0	29.2 21.1
GREEN SUNFISH	13	6.4	1.3	0	0	0	27.1 54.7
BLUEGILL	6	1.2	6	0	0	0	12.5 10.2
TOTALS	49	11.7	4.8	0	0	0	
TOTAL SPECIES SAMPLING TIME (MIN)	5	40					* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT

TABLE G-2 cont.

page 5 of 7

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP RD	PCT COMP BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	1	1	1	0	0	0	14.3
FATHEAD MINNOW	1	2	1	0	0	0	14.3
GREEN SUNFISH	3	57	2	1	0	0	42.9
BLUEGILL	1	2	1	0	0	0	14.3
LARGEMOUTH BASS	1	1.6	0	1	0	0	14.3
TOTALS	7	79	5	2	0	0	21.0
TOTAL SPECIES SAMPLING TIME (MIN)	5	40				# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	1.7 .02



WAPORA

TABLE G-2 cont.

page 6 of 7

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO. OF T	
			0-8	>8-16	>16-24	>24	NO.
GOLDFISH	1	610	0	0	1	0	4
CARP	8	27988	0	0	1	7	2.9
BLUNTNOSE MINNOW	3	3	3	0	0	0	1.1
WHITE SUCKER	1	155	0	0	1	0	4
BROOK SILVERSTIDE	11	19	11	0	0	0	40
GREEN SUNFISH	10	112	8	2	0	0	3.7
PUMPKINSEED	96	5040	12	84	0	0	35.2
BLUEGILL	122	4731	22	100	0	0	44.7
LARGEMOUTH BASS	4	519	0	3	1	0	1.5
BLACK CRAPPIE	14	1622	0	12	2	0	5.1
GREEN X PUMPKINSEED	2	203	0	2	0	0	7
GREEN X BLUEGILL	1	32	0	1	0	0	4
TOTALS	273	41035	56	204	6	7	
TOTAL SPECIES	12						68.2
SAMPLING TIME (MIN)	40						10.26

* FISH/10 MIN OF EFFORT
 KG/10 MIN OF EFFORT

TABLE G-2 cont.

page 7 of 7

METHOD: Electrofishing
 DATE: February 12, 13 (combined)
 ZONE: 9

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY WT
	TOTAL NO	WEIGHT (GM)	0-6	>8-16	>16-24	
GOLDFISH	3	154.5	0	0	0	4.3
SPOTFIN SHINER	1	2	1	0	0	1.4
BLUNTNOSSE MINNOW	5	3	5	0	0	7.1
SPOTTED SUCKER	1	51	0	1	0	1.4
BROOK SILVERSIDE	5	8	5	0	0	7.1
GREEN SUNFISH	2	5	2	0	0	2.9
PUMPKINSEED	24	132.1	0	21	0	30.0
BLOEGILL	32	99.2	9	23	0	45.7
TOTALS	70	339.9	22	45	0	3
TOTAL SPECIES	8					
SAMPLING TIME (MIN)	40					
		† FISH/10 MIN OF EFFORT			17.5	
		KG/10 MIN OF EFFORT			.97	

TABLE G-3

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during March, 1976.

METHOD: Electrofishing
DATE: March 22, 24 (combined)
ZONE: 1

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
GOLDFISH	1	250	0	0	1	0
CARP	5	6350	0	0	0	5
BLUNTNOSE MINNOW	43	23	43	0	0	0
BROOK SILVERSIDE	3	2	3	0	0	0
GREEN SUNFISH	2	6	2	0	0	0
BLUEGILL	5	32	4	1	0	0
LARGEMOUTH BASS	2	26	2	0	0	0
TOTALS	61	6692	54	1	1	5
TOTAL SPECIES SAMPLED TIME (MIN)			7	# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT		
			20	30.5 3.35		

TABLE G-3 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			PCT NO WT	COMP BY NO WT
			0-8	>8-16	>16-24		
CARP	3	5950	0	0	0	3	4,2
BLUNTNOSSE MINNOW	9	16	9	0	0	0	97,4
FATHEAD MINNOW	4	5	4	0	0	0	12,7
BROOK SILVERSIDE	40	61	40	0	0	0	5,6
GREEN SUNFISH	7	25	7	0	0	0	1,0
BLUEGILL	6	18	6	0	0	0	9,9
SMALLMOUTH BASS	1	24	0	1	0	0	0,5
LARGEMOUTH BASS	1	10	1	0	0	0	1,4
TOTALS	71	6110	67	1	0	3	4,2
TOTAL SPECIES SAMPLING TIME (MIN)	8						
	20						
						# FISH/10 MIN OF EFFORT	35,5
						KG/10 MIN OF EFFORT	3,06



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TABLE G-3 cont.

page 3 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
GOLDFISH	2	610	0	0	2	0
CARP	10	8740	0	0	3	70.3
SPOTTAIL SHINER	4	26	4	0	0	8.3
ROSYFACE SHINER	1	0	1	0	0	2.1
BLUNTNOSE MINNOW	5	20	5	0	0	10.4
FATHEAD MINNOW	1	2	1	0	0	2.1
WHITE SUCKER	4	3250	0	0	4	6.3
SPOTTED SUCKER	1	40	0	1	0	2.1
GREEN SUNFISH	1	1	1	0	0	2.1
PUMPKINSEED	4	272	0	4	0	8.3
BLUEGILL	10	414	1	9	0	20.8
LARGEMOUTH BASS	1	800	0	0	1	2.1
BLACK CRAPPIE	4	1103	0	1	3	6.3
TOTALS	48	13279	13	15	8	12
TOTAL SPECIES SAMPLING TIME (MIN)	13					# FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT

TABLE G-3 cont.

page 4 of 9

METHOD: Electrostimulation
 DATE: March 22, 24 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
SPOTTED SHINER	5	9	5	0	0	0	3.3
SAND SHINER	3	3	3	0	0	0	2.0
HIMIC SHINER	3	3	3	0	0	0	2.0
BLUNTNOSE MINNOW	115	265	115	0	0	0	75.7
SPOTTED SUCKER	1	4	1	0	0	0	7
CHANNEL CATFISH	1	6	1	0	0	0	7
BROOK SILVERSIDE	1	1	1	0	0	0	7
GREEN SUNFISH	2	36	1	1	0	0	1.3
PUMPKINSEED	6	55	4	2	0	0	3.9
BLUEGILL	13	82	10	3	0	0	8.6
GREEN X PUMPKINSEED	2	22	2	0	0	0	1.3
TOTALS	152	489	146	6	0	0	4.5
TOTAL SPECIES SAMPLING TIME (MIN)	1.1					# FISH/10 MIN OF EFFORT	76.0
	20					KG/10 MIN OF EFFORT	.24

TABLE G-3 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL			LENGTH (CM) 0-6 >6-16 >16-24 >24	PCT COMP BY WT NO WT
			0-6	>6-16	>16-24		
NORTHERN PIKE	1	1000	0	0	0	1	1.7 52.4
COMMON SHINER	1	2	1	0	0	0	1.7 .1
SAND SHINER	1	0	1	0	0	0	1.7 0.0
BLUNTNOSE MINNOW	18	41	18	0	0	0	30.5 2.1
YELLOW BULLHEAD	1	150	0	0	1	0	1.7 7.9
BROOK SILVERSIDE	2	4	2	0	0	0	3.4 .2
GREEN SUNFISH	3	157	55	3	0	0	13.6 8.3
PUMPKINSEED	4	34	3	1	0	0	6.8 1.8
BLUEGILL	19	162	16	3	0	0	32.2 8.5
LARGEMOUTH BASS	3	350	1	0	2	0	5.1 18.4
BLUEGILL X PUMPKINSEED	1	4	1	0	0	0	1.7 .2
TOTALS	59	1907	46	7	3	1	
TOTAL SPECIES							# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	11						29.5
	20						KG/10 MIN OF EFFORT
							.95

TABLE G-3 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO.	PCT COMP BY WT
			0-8	>8-16	>16-24		
SPOTFIN SHINER	1	1	1	0	0	0	1.3
SAND SHINER	1	1	1	0	0	0	1.3
BLUNTNOSSE MINNOW	60	121	60	0	0	0	75.2
FATHEAD MINNOW	13	9	13	0	0	0	16.5
GREEN SUNFISH	4	23	2	2	0	0	5.1
TOTALS	79	160	77	2	0	0	0
TOTAL SPECIES SAMPLING TIME (MIN)	5 20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	39.5 .08

TABLE G-3 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 7

SPECIES LIST	TOTAL		LENGTH (CM)			PCT	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	COMP BY NO WT
BLUNTNOSE MINNOW	3	1.1	3	0	0	0	14.3 1.4
SPOTTED SUCKER	1	400	0	1	0	0	4.8 4.8
GREEN SUNFISH	6	133	4	2	0	0	28.6 1.6
BLUEGILL	11	269	4	7	0	0	52.4 33.1
TOTALS	21	814	11	9	1	0	
TOTAL SPECIES SAMPLING TIME (MIN)	4	20					* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT 10.5 .41

TABLE G-3 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
CARP	6	15600	0	0	0	4.1
SPOTFIN SHINER	1	0	1	0	0	.7
BLUNTNOSE MINNOW	16	59	16	0	0	0.0
BROOK SILVERSIDE	1	1	1	0	0	1.1
ROCK BASS	1	40	0	1	0	.7
GREEN SUNFISH	20	319	10	10	0	0
PUMPKINSEED	19	1143	0	19	0	13.7
BLUEGILL	47	2230	6	39	0	0
LARGEMOUTH BASS	4	258	1	2	1	0
BLACK CRAPPIE	4	534	0	3	1	0
BLUEGILL X PUMPKINSEED	27	680	0	27	0	0
TOTALS	146	20866	37	104	2	6
TOTAL SPECIES	11					
SAMPLING TIME (MIN)	20					
# FISH/10 MIN OF EFFORT			73.0			
KG/10 MIN OF EFFORT			10.43			

TABLE G-3 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: March 22, 24 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT	
			0-8	>8-16	>16-24	>24	
BLUNTNOSSE MINNOW	1	3	1	0	0	0	1.4 .1
GREEN SUNFISH	4	10.2	2	2	0	0	5.6 4.0
PUMPKINSEED	24	10.70	0	2.4	0	0	33.3 42.1
BLUEGILL	41	13.49	3	3.8	0	0	57.7 53.1
LARGEMOUTH BASS	1	1.6	1	0	0	0	1.4 .7
TOTALS	71	25.42	7	6.4	0	0	
TOTAL SPECIES SAMPLING TIME (MIN)	5 20						* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
							35.5 1.27



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TABLE G-4

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during April, 1976.

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT	
			0-8	>8-16	>16-24	>24	
CARP	10	19750	0	0	0	10	3.8 97.6
BLUNTNOSE MINNOW	219	143	21.9	0	0	0	84.2 .7
FATHEAD MINNOW	1	2	1	0	0	0	.4 0.0
GREEN SUNFISH	14	30	1.4	0	0	0	5.4 .1
PUMPKINSEED	6	245	3	2	1	0	2.3 1.2
BLEUGILL	3	15	3	0	0	0	1.2 .1
LARGEMOUTH BASS	2	40	1	1	0	0	.8 .2
BLEUGILL X PUMPKINSEED	4	12	4	0	0	0	1.5 .1
JOHNNY DARTER	1	2	1	0	0	0	.4 0.0
TOTALS	260	20240	246	3	1	10	
TOTAL SPECIES SAMPLING TIME (MIN)	9 20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	130,0 10,12



TABLE G-4 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
CARP	15	19200	0	0	0	1.1.2
MIMIC SHINER	1	1	1	0	0	0.0
BLUNTNOSSE MINNOW	48	48	48	0	0	35.6
YELLOW BULLHEAD	3	191	1	2	0	2.2
BROOK SILVERSIDE	1	1	1	0	0	0.0
GREEN SUNFISH	15	95	15	0	0	1.1.2
PUMPKINSEED	1	70	0	1	0	0.7
BLUEGILL	27	302	22	5	0	20.1
LARGEMOUTH BASS	19	3911	4	7	2	6
BLACK CRAPPIE	1	86	0	1	0	0.7
GREEN X PUMPKINSEED	1	1	1	0	0	0.0
BLUEGILL X PUMPKINSEED	2	7	2	0	0	1.5
TOTALS	134	23916	95	16	2	21
TOTAL SPECIES SAMPLING TIME (MIN)	12					# FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT
						67.0
						11.96

METHOD: Electrostimulation
DATE: April 14, 15 (combined)
ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	1	375	0	0	0	1	1.0	2.4
GOLDFISH	1	497	0	0	1	0	1.0	3.1
CARP	2	11900	0	0	2	1.9	75.1	
SPOTTIN SHINER	4	6	4	0	0	3.8	0.0	
SAND SHINER	23	48	23	0	0	21.9	*3	
MIMIC SHINER	1	3	1	0	0	1.0	0.0	
BLUNTNOSE MINNOW	40	85	40	0	0	38.1	*5	
FATHEAD MINNOW	13	1.9	1.3	0	0	12.4	*1	
WHITE SUCKER	1	3	1	0	0	1.0	0.0	
GOLDEN REDHORSE	2	366	0	0	2	0	1.9	2.3
SHORthead REDHORSE	1	547	0	0	1	0	1.0	3.5
CHANNEL CATFISH	2	514	0	0	1	1	1.9	3.2
BROOK SILVERSIDE	7	10	7	0	0	0	6.7	*1
PUMPKINSEED	1	50	0	1	0	0	1.0	*3
BLOEGTIL	3	191	1	2	0	0	2.9	1.2
LARGEMOUTH BASS	1	1000	0	0	1	1.0	6.3	
BLACK CRAFTIE	1	215	0	0	1	0	1.0	1.4
LOGPERCH	1	12	0	1	0	0	1.0	*1
TOTALS	105	15344	90	4	6	5		
TOTAL SPECIES	18						# FTSM/10 MIN OF EFFORT	52.5
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT	7.92

TABLE G-4 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
CARP	2	5600	0	0	0	2 1.7 76.6
SFOTFIN SHINER	10	8	1.0	0	0	0 8.3 .1
SAND SHINER	4	3	4	0	0	0 3.3 0.0
BLUETNOSE MINNOW	42	6.6	4.2	0	0	0 35.0 .9
FATHEAD MINNOW	4	4	4	0	0	0 3.3 .1
WHITE SUCKER	1	900	0	0	0	1 1.8 12.3
SPOTTED SUCKER	4	4.1	3	1	0	0 3.3 .6
BROOK SILVERSIDE	8	1.1	8	0	0	0 6.7 .2
GREEN SUNFISH	19	3.61	1.4	5	0	0 15.8 4.9
PUMPKINSEED	8	.94	7	1	0	0 6.7 1.3
BLUEGILL	9	1.12	7	2	0	0 7.5 1.5
GREEN X PUMPKINSEED	8	.93	6	2	0	0 6.7 1.3
GREEN X BLUEGILL	1	1.3	1	0	0	0 .8 .2
TOTALS	120	7309	106	11	0	3
TOTAL SPECIES SAMPLING TIME (MIN)	13		# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT			60.0 3.65
	20					

TABLE G-4 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
SPOTTIN SHINER	1	1	1	0	0	1.0 *1
SAND SHINER	4	2	4	0	0	3.9 *1
BLUNTNOSE MINNOW	40	64	40	0	0	39.2 *4.5
FATHEAD MINNOW	1	1	1	0	0	1.0 *1
SPOTTED SUCKER	3	71	2	1	0	2.9 *5.2
BROOK SILVERSIDE	8	14	8	0	0	7.8 *1.1
GREEN SUNFISH	12	249	8	4	0	11.8 *18.4
PUMPKINSEED	12	223	7	5	0	0 *1.6.5
BLUEGILL	16	145	12	4	0	15.7 *10.7
LARGEMOUTH BASS	2	573	1	0	0	1 *2.0
BLACK CRAPPIE	2	13	2	0	0	2.0 *4.2
GREEN X PUMPKINSEED	1	3	1	0	0	1.0 *2
TOTALS	102	1357	87	14	0	1
TOTAL SPECIES SAMPLING TIME (MIN)	1.2					* FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT
						51.0 *63



WAPORA

TABLE G-4 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT NO	COMP BY WT
			0-8	>8-16	>16-24		
CARP	2	7300	0	0	0	2	4.1 90.2
SPOTFIN SHINER	1	2	1	0	0	0	2.0 0.0
MIMIC SHINER	1	1	1	0	0	0	2.0 0.0
BLUNTNOSE MINNOW	15	31	15	0	0	0	30.6 4
FATHEAD MINNOW	1	1	1	0	0	0	2.0 0.0
BROOK SILVERSIDE	6	1.1	6	0	0	0	12.2 1
ROCK BASS	2	4.22	0	1	1	0	4.1 5.2
GREEN SUNFISH	7	9.8	7	0	0	0	14.3 1.2
PUMPKINSEED	5	1.26	2	3	0	0	10.2 1.6
BLUEGILL	4	2.6	3	1	0	0	8.2 3
LARGEMOUTH BASS	3	6.1	0	3	0	0	6.1 8
GREEN X PUMPKINSEED	2	1.6	2	0	0	0	4.1 0.2
TOTALS	49	8096	38	8	1	2	
TOTAL SPECIES SAMPLING TIME (MIN)	12		# FISH/10 MIN OF EFFORT			24.5	
	20		KG/10 MIN OF EFFORT			4.05	

TABLE G-4 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	8	16	8	0	0	0	25.8
SPOTTED SUCKER	1	89	0	0	1	0	2.3
BROOK SILVERSIDE	2	4	2	0	0	0	3.2
GREEN SUNFISH	10	307	5	5	0	0	12.4
PUMPKINSEED	5	255	0	5	0	0	6.5
BLUEGILL	5	43	4	1	0	0	6.7
TOTALS	34	714	19	11	1	0	16.1
TOTAL SPECIES SAMPLING TIME (MIN)	6		# FISH/10 MIN OF EFFORT			15.5	
	20		KG/10 MIN OF EFFORT			•36	

TABLE G-4 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT
			0-8	>8-16	>16-24		
SPOTTIN SHINER	5	1.2	5	0	0	0	3.3 .2
BLUNTNOSE MINNOW	37	6.9	37	0	0	0	24.3 1.3
GOLDEN REDHORSE	2	1.85	0	0	0	2	1.3 22.5
BROOK STIVERSIDE	10	1.4	10	0	0	0	6.6 .3
GREEN SUNFISH	30	4.24	22	8	0	0	19.7 8.1
PUMPKINSEED	12	4.85	4	8	0	0	7.9 9.2
BLUEGILL	34	9.19	14	20	0	0	22.4 17.4
LARGEMOUTH BASS	9	19.71	3	3	0	3	5.9 37.4
GREEN X PUMPKINSEED	5	1.63	2	3	0	0	3.3 3.1
BLUEGILL X PUMPKINSEED	8	2.7	8	0	0	0	5.3 .5
TOTALS	152	5273	105	42	0	5	
TOTAL SPECIES	10						# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT

TABLE G-4 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	2	0	2	0	0	0	0
BROOK SILVERSTIDE	1	1	1	0	0	0	2.6
GREEN SUNFISH	6	265	2	4	0	0	15.4
PUMPKINSEED	14	536	2	12	0	0	35.9
BLUEGILL	12	295	1	11	0	0	24.7
LARGEMOUTH BASS	2	31	0	2	0	0	5.1
GREEN X PUMPKINSEED	1	16	1	0	0	0	2.6
GREEN X BLUEGILL	1	48	0	1	0	0	1.3
TOTALS	39	1,193	9	30	0	0	4.0
TOTAL SPECIES SAMPLING TIME (MIN)	8					# FISH/10 MIN OF EFFORT	19.5
	20					KG/10 MIN OF EFFORT	.60

TABLE G-5

Summary of electrofishing in the Grand River at fishing zone 1 through 9 during May, 1976.

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 1

SPECIES LIST	TOTAL		LENGTH (CM)			FCT		COMP BY	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO	WT	
CARP	6	15600	0	0	0	6	2	.5	92.3
SPOTTAIL SHINER	1	4	1	0	0	0	4	0	0
BLUNTNOSE MINNOW	227	211	227	0	0	0	93.8	1.3	
FATHEAD MINNOW	1	2	1	0	0	0	4	0	
WHITE SUCKER	1	600	0	0	0	1	4	3.5	
PUMPKINSEED	3	114	0	3	0	0	1	.2	.7
LARGEMOUTH BASS	3	378	0	2	0	1	1	.2	.2
TOTALS	242	16909	229	5	0	8			
TOTAL SPECIES SAMPLING TIME (MIN)	7						# FISH/10 MIN OF EFFORT	121.0	
	20						KG/10 MIN OF EFFORT	8.45	

TABLE G-5 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
CARP	4	5350	0	0	0	4	5.6
SPOTTAIL SHINER	3	29	2	1	0	0	4.2
BLUNTMOUTH MINNOW	22	19	22	0	0	0	5
SHORTHEAD REDHORSE	1	395	0	0	0	1	31.0
CHANNEL CATFISH	1	48	0	0	1	0	1.4
GREEN SUNFISH	25	259	23	2	0	0	1.4
PUMPKINSEED	2	28	1	1	0	0	35.2
BLUEGILL	5	23	5	0	0	0	2.6
LARGEMOUTH BASS	7	263	0	5	2	0	7.0
BLUEGILL X PUMPKINSEED	1	8	1	0	0	0	9.9
TOTALS	71	6444	54	9	3	5	4.4
TOTAL SPECIES SAMPLING TIME (MIN)	10		# FISH/10 MIN OF EFFORT			35.5	
	20		KG/10 MIN OF EFFORT			3.22	



WAPORA

TABLE G-5 cont.

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO
			0-8	>8-16	>16-24	
CARP	12	36850	0	0	0	1.2
COMMON SHINER	1	5	1	0	0	1.1
SPOTTIN SHINER	18	71	18	0	0	20.0
SAND SHINER	4	3	1	0	0	1.1
BLUNTNOSE MINNOW	4	8	4	0	0	4.4
FATHEAD MINNOW	1	1	1	0	0	1.1
WHITE SUCKER	1	1.6	0	1	0	1.1
GOLDEN REDHORSE	1	284	0	0	0	1.1
CHANNEL CATFISH	2	600	0	0	0	2.2
BROOK SILVERSIDE	13	30	1.3	0	0	1.4
GREEN SUNFISH	13	300	7	6	0	1.4
PUMPKINSEED	6	390	0	6	0	6.7
BLUEGILL	9	232	2	7	0	10.0
LARGEMOUTH BASS	4	71	0	4	0	4.4
GREEN X PUMPKINSEED	4	171	1	3	0	4.4
TOTALS	90	39034	48	27	0	1.5
TOTAL SPECIES SAMPLING TIME (MIN)	15				# FISH/10 MIN OF EFFORT	45.0
	20				KG/10 MIN OF EFFORT	19.52

TABLE G-5 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-6	>6-16	>16-24	
CARP	1	2400	0	0	0	1
SPOTFIN SHINER	3	10	3	0	0	0
BLUNTNOSE MINNOW	5	5	5	0	0	0
BROOK SILVERSIDE	1	2	1	0	0	0
GREEN SUNFISH	2	41	1	1	0	0
PUMPKINSEED	6	112	2	4	0	0
BLUEGILL	4	8	4	0	0	0
LARGEMOUTH BASS	4	89	0	4	0	0
TOTALS	26	2667	16	9	0	1
TOTAL SPECIES SAMPLING TIME (MIN)	8					# FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT
						1.30
						1.33



WAPORA

TABLE G-5 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 5

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY NO WT	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	
SPOTFIN SHINER	5	1.0	5	0	0	0	13.5 *3
BLUNTNOSIE MINNOW	7	1.4	7	0	0	0	18.9 *4
FATHEAD MINNOW	1	.2	1	0	0	0	2.7 *1
WHITE SUCKER	1	480	0	0	0	1	2.7 14.0
GOLDEN REDHORSE	2	190	0	0	2	0	5.4 5.6
GREEN SUNFISH	3	23	3	0	0	0	8.1 *7
PUMPKINSEED	5	1.29	1	4	0	0	13.5 3.8
BLUEGILL	10	1.70	4	6	0	0	27.0 5.0
LARGEMOUTH BASS	3	2400	0	0	0	3	8.1 70.2
TOTALS	37	3419	21	10	2	4	
TOTAL SPECIES	9						* FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT
							18.5 1.71

TABLE G-5 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-6	>8-16	>16-24	
CARP	1	4700	0	0	0	1
BLUNTNOSE MINNOW	5	10	5	0	0	0
SPOTTED SUCKER	2	3	2	0	0	0
BROOK SILVERSIDE	1	1	1	0	0	0
GREEN SUNFISH	5	164	3	2	0	0
PUMPKINSEED	1	2	1	0	0	0
BLUEGILL	4	6	4	0	0	0
LARGEMOUTH BASS	3	49	1	2	0	0
GREEN X PUMPKINSEED	1	36	0	1	0	0
GREEN X BLUEGILL	1	2	1	0	0	0
TOTALS	24	4976	18	5	0	1
TOTAL SPECIES SAMPLING TIME (MIN)	10 20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
						1.20 2.49



WAPORA

TABLE G-5 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY	
			0-8	>8-16	>16-24	>24	NO WT
BLUNTNOSE MINNOW	6	24	8	0	0	0	30.8 6.5
GREEN SUNFISH	10	182	4	6	0	0	38.5 49.6
PUMPKINSEED	1	42	0	1	0	0	3.8 11.4
BLUEGILL	4	14	4	0	0	0	15.4 3.8
LARGEMOUTH BASS	1	6	0	1	0	0	3.8 1.6
GREEN X PUMPKINSEED	1	73	0	1	0	0	3.8 21.3
BLUEGILL X PUMPKINSEED	1	21	0	1	0	0	3.8 5.7
TOTALS	26	367	16	10	0	0	
TOTAL SPECIES SAMPLING TIME (MIN)	7		# FISH/10 MIN OF EFFORT			13.0	
	20		KG/10 MIN OF EFFORT			.18	

TABLE G-5 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
CARP	2	2080	0	0	1	1
SPOTTED SHINER	3	6	3	0	0	2.5
BLUNTNOSE MINNOW	1	2	1	0	0	3.7
BROOK SILVERSIDE	1	1	1	0	0	1.2
GREEN SUNFISH	16	508	6	10	0	0.0
PUMPKINSEED	18	1056	3	15	0	1.2
BLUEGILL	30	915	3	27	0	19.8
LARGEMOUTH BASS	6	236	3	2	1	22.2
BLACK CRAPPIE	1	40	0	1	0	7.4
GREEN X PUMPKINSEED	3	230	0	3	0	1.2
TOTALS	81	5074	20	58	2	4.5
TOTAL SPECIES						
SAMPLING TIME (MIN)	10					
	20					
# FISH/10 MIN OF EFFORT						40.5
KG/10 MIN OF EFFORT						2.54

TABLE G-5 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	
			0-6	>6-16	>16-24	>24	WT
BLUNTNose MINNOW	3	3	3	0	0	0	9.7 .3
WHITE SUCKER	1	520	0	0	0	1	3.2 43.4
GREEN SUNFISH	10	1.67	7	3	0	0	32.3 13.9
PUMPKINSEED	8	372	0	6	0	0	25.8 31.0
BLUEGILL	6	1.10	2	4	0	0	19.4 9.2
LARGEMOUTH BASS	2	1.7	0	2	0	0	6.5 1.4
GREEN X PUMPKINSEED	1	1.0	1	0	0	0	3.2 .8
TOTALS	34	1.199	13	17	0	1	
TOTAL SPECIES SAMPLING TIME (MIN)	7	20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
							15.5 .60

TABLE G-6

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during June, 1976.

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP WT	PCT COMP BY NO
			0-8	>8-16	>16-24		
CARP	10	13650	0	0	0	10	14.1
BLUNTNOSE MINNOW	38	50	38	0	0	0	53.5
SHORTHEAD REDHORSE	1	1000	0	0	0	1	•3
GREEN SUNFISH	4	44	3	1	0	1	•4
PUMPKINSEED	13	174	9	4	0	0	5•6
BLUEGILL	5	21	5	0	0	0	18.3
TOTALS	71	14939	55	5	0	7•0	•1
TOTAL SPECIES SAMPLING TIME (MIN)	6 20				# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	35.5 7.47	

TABLE G-6 cont.

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO WT
GOLDFISH	1	222	0	0	1	0	1.3 11.9
CARP	1	1000	0	0	0	1	1.3 53.4
BLUNTNOSE MINNOW	13	13	13	0	0	0	17.1 .7
GREEN SUNFISH	38	388	31	7	0	0	50.0 20.7
PUMPKINSEED	12	101	11	1	0	0	15.8 5.4
BLUEGILL	9	99	7	2	0	0	11.8 5.3
LARGEMOUTH BASS	1	40	0	1	0	0	1.3 2.1
GREEN X PUMPKINSEED	1	8	1	0	0	0	1.3 .4
TOTALS	76	1871	63	11	1	1	
TOTAL SPECIES SAMPLING TIME (MIN)	8	20					* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT .94

TABLE G-6 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY	
			<8	8-16	>16-24	>24	NO WT
CARP	1	4800	0	0	0	1	3.3 89.5
SPOTFIN SHINER	1	2	1	0	0	0	3.3 0.0
BLUNTNOSE MINNOW	3	6	3	0	0	0	10.0 .1
GREEN SUNFISH	10	290	4	6	0	0	33.3 5.4
PUMPKINSEED	11	203	7	4	0	0	36.7 3.8
BLUEGILL	3	36	2	1	0	0	10.0 .7
LARGEMOUTH BASS	1	24	0	1	0	0	3.3 .4
TOTALS	30	5361	17	12	0	1	
TOTAL SPECIES SAMPLING TIME (MIN)	7		# FISH/10 MIN OF EFFORT			15.0	
	20		KG/10 MIN OF EFFORT			2.68	

TABLE G-6 cont.

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
GREEN SUNFISH	5	111	2	3	0	0
PUMPKINSEED	4	67	2	2	0	0
BLUEGILL	9	250	4	5	0	0
BLACKSIDE DARTER	1	2	1	0	0	0
TOTALS	19	430	9	10	0	0
TOTAL SPECIES	4					# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20					KG/10 MIN OF EFFORT
						.22

METHOD: Electrofishing
DATE: June 14, 15 (combined)
ZONE: 7

SPECIES LIST	TOTAL		LENGTH (CM)				PCT COMP BY WT	
	NO	WEIGHT (GM)	0-6	>6-16	>16-24	>24	NO	WT
SPOTTIN SHINER	1	3	1	0	0	0	2.9	.3
BLUNTNOSE MINNOW	3	4	3	0	0	0	6.8	.5
GREEN SUNFISH	11	360	5	6	0	0	32.4	41.4
PUMPKINSEED	11	376	5	6	0	0	32.4	43.2
BLUEGILL	5	77	3	2	0	0	14.7	8.9
LARGEMOUTH BASS	1	12	0	1	0	0	2.9	1.4
GREEN X PUMPKINSEED	2	38	1	1	0	0	5.9	4.4
TOTALS	34	670	18	16	0	0	0	0
TOTAL SPECIES SAMPLING TIME (MIN)	7						# FISH/10 MIN OF EFFORT	17.0
	20						KG/10 MIN OF EFFORT	.43



TABLE G-6 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO
GOLDFISH	1	41.0	0	0	0	1	2.4
BLUNTNOSE MINNOW	2	2	2	0	0	0	4.9
SPOTTED SUCKER	1	1.6	0	1	0	0	2.4
GREEN SUNFISH	1.6	32.8	1.1	5	0	0	39.0
PUMPKINSEED	1.4	47.6	2	1.2	0	0	34.1
BLUEGILL	6	50	5	1	0	0	14.6
GREEN X PUMPKINSEED	1	7.9	1	0	0	0	2.4
TOTALS	41	136.1	21	1.9	0	1	
TOTAL SPECIES	7						* FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT
							20.5 + 6.8

TABLE G-6 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
SPOTTED SUCKER	1	110	0	0	1	0	1.5
GOLDEN REDMORSE	2	745	0	0	0	2	23.2
GREEN SUNFISH	8	178	3	5	0	0	12.3
PUMPKINSEED	33	1054	9	24	0	0	6.7
BLUEGILL	20	534	4	16	0	0	50.8
LARGEMOUTH BASS	1	18	0	1	0	0	30.6
TOTALS	65	2639	16	46	1	2	20.2
TOTAL SPECIES SAMPLING TIME (MIN)	6				# FISH/10 MIN OF EFFORT	32.5	
	20				KG/10 MIN OF EFFORT	1.32	

TABLE G-7

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during July, 1976 .

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO. WT	
			0-6	>6-16	>16-24	>24	
CARP	10	12200	0	0	0	1.0	15.2 91.4
BLUNTNOSE MINNOW	13	29	1.3	0	0	0	19.7 2
YELLOW BULLHEAD	1	30	0	1	0	0	1.5 2
GREEN SUNFISH	20	387	8	12	0	0	30.3 2.9
PUMPKINSEED	17	306	3	14	0	0	25.8 2.3
LARGEMOUTH BASS	5	397	3	0	1	1	7.6 3.0
TOTALS	66	13349	27	27	1	1	
TOTAL SPECIES SAMPLING TIME (MIN)	6 20						* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT 33.0 6.67

TABLE G-7 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
CARP	6	13834	0	0	0	6	6.4
BLUNTNOSE MINNOW	26	57	26	0	0	0	27.7
GREEN SUNFISH	30	451	17	13	0	0	31.9
PUMPKINSEED	17	208	4	13	0	0	2.9
BLOEGILL	3	43	1	2	0	0	18.1
SMALLMOUTH BASS	3	196	1	1	1	0	3.2
LARGEMOUTH BASS	9	797	6	1	1	1	1.3
TOTALS	94	15636	35	30	2	7	5.1
TOTAL SPECIES SAMPLING TIME (MIN)	7					# FISH/10 MIN OF EFFORT	47.0
	20					KG/10 MIN OF EFFORT	7.82

TABLE G-4 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
SPOTFIN SHINER	1	1	0	0	0	1.0 *1
SAND SHINER	4	2	4	0	0	3.9 *1
BLUNTNOSE MINNOW	40	61	40	0	0	39.2 4.5
FATHEAD MINNOW	1	1	1	0	0	1.0 *1
SPOTTED SUCKER	3	71	2	1	0	2.9 5.2
BROOK SILVERSIDE	8	14	8	0	0	7.8 1.1
GREEN SUNFISH	12	249	9	4	0	11.8 18.4
PUMPKINSEED	12	223	7	5	0	0 16.5
BLUEGILL	16	145	12	4	0	0 15.7
LARGEMOUTH BASS	2	573	1	0	0	1 10.7
BLACK CRAPPIE	2	13	2	0	0	0 42.2
GREEN X PUMPKINSEED	1	3	1	0	0	0 1.0
TOTALS	102	1357	87	14	0	1 *2
TOTAL SPECIES SAMPLING TIME (MIN)	12	20				* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT 51.0 *68

TABLE G-4 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
CARP	2	7300	0	0	0	2
SPOTTED SHINER	1	2	1	0	0	4.1
MINNIE SHINER	1	1	1	0	0	2.0
BLUNTNOSE MINNOW	15	31	15	0	0	2.0
FATHEAD MINNOW	1	1	1	0	0	0.0
BROOK SILVERSIDE	6	11	6	0	0	0.0
ROCK BASS	2	422	0	1	1	12.2
GREEN SUNFISH	7	96	7	0	0	4.1
PUMPKINSEED	5	126	2	3	0	14.3
BLUEGILL	4	26	3	0	0	10.2
LARGEMOUTH BASS	3	61	0	3	0	8.2
GREEN X PUMPKINSEED	2	16	2	0	0	6.1
TOTALS	49	8096	33	8	1	2
TOTAL SPECIES SAMPLING TIME (MIN)	12		# FISH/10 MIN OF EFFORT			24.5
	20		KG/10 MIN OF EFFORT			4.05

TABLE G-4 cont.

METHOD: Electrostimulation
DATE: April 14, 15 (combined)
ZONE: 7

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			>24	PCT BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	8	16	8	0	0	0	25.8
SPOTTED SUCKER	1	89	0	0	1	0	3.2
BROOK SILVERSIDE	2	4	2	0	0	0	12.4
GREEN SUNFISH	10	307	5	5	0	0	6.5
PUMPKINSEED	5	255	0	5	0	0	43.0
BLUEGILL	5	43	4	1	0	0	35.7
TOTALS	34	714	19	11	1	0	6.0
TOTAL SPECIES SAMPLING TIME (MIN)	6	# FISH/10 MIN OF EFFORT			15.5	KG/10 MIN OF EFFORT	
	20					• 36	

TABLE G-4 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCY NO	COMP BY WT
			0-6	>6-16	>16-24		
SPOTFIN SHINER	5	1.2	5	0	0	0	3,3 .2
BLUNTNOSE MINNOW	37	6.9	37	0	0	0	24,3 1,3
GOLDEN REDHORSE	2	1.185	0	0	0	2	1,3 22,5
BROOK SILVERSIDE	10	1.4	10	0	0	0	6,6 .3
GREEN SUNFISH	30	4.24	22	8	0	0	19,7 6,1
PUMPKINSEED	12	4.85	4	8	0	0	7,9 9,2
BLUEGILL	34	91.9	14	20	0	0	22,4 17,4
LARGEMOUTH BASS	9	197.1	3	3	0	3	5,9 37,4
GREEN X PUMPKINSEED	5	1.63	2	3	0	0	3,3 3,1
BLUEGILL X PUMPKINSEED	8	2.7	8	0	0	0	5,3 .5
TOTALS	152	527.3	105	42	0	5	
TOTAL SPECIES SAMPLING TIME (MIN)	1.0				# FISH/10 MIN OF EFFORT	76.0	
	20				KG/10 MIN OF EFFORT	2,64	



WAPORA

TABLE G-4 cont.

METHOD: Electrofishing
 DATE: April 14, 15 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY WT	
			0-6	>6-16	>16-24	>24	NO
BLUNTNOSE MINNOW	2	0	2	0	0	0	5.1
BROOK SILVERTIDE	1	1	1	0	0	0	2.6
GREEN SUNFISH	6	265	2	4	0	0	15.4
PUMPKINSEED	14	536	2	12	0	0	35.9
BLUEGILL	12	295	1	11	0	0	30.8
LARGEMOUTH BASS	2	31	0	2	0	0	5.1
GREEN X PUMPKINSEED	1	16	1	0	0	0	2.6
GREEN X BLUEGILL	1	48	0	1	0	0	4.0
TOTALS	39	1193	9	30	0	0	
TOTAL SPECIES SAMPLING TIME (MIN)	8	20					† FISH/10 MIN OF EFFORT 19.5 KG/10 MIN OF EFFORT .60

TABLE G-5

Summary of electrofishing in the Grand River at fishing zone 1 through 9 during May, 1976.

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	COMP BY WT
			0-8	>8-16	>16-24		
CARP	6	15600	0	0	0	6	24.5
SPOTTAIL SHINER	1	4	1	0	0	0	0.0
BLUNTNOSE MINNOW	227	21.1	227	0	0	0	93.8
FATHEAD MINNOW	1	2	1	0	0	0	1.3
WHITE SUCKER	1	600	0	0	0	0	0.0
PUMPKINSEED	3	1.4	0	3	0	1	4
LARGEMOUTH BASS	3	378	0	2	0	0	3.5
TOTALS	242	16909	229	5	0	1	1.2
TOTAL SPECIES	7						
SAMPLING TIME (MIN)	20						
		# FISH/10 MIN OF EFFORT			121.0		
		KG/10 MIN OF EFFORT			8.45		

TABLE G-5 cont.

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY NO WT	
			0-9	>9-16	>16-24	>24	
CARP	4	5350	0	0	0	4	54.6 83.0
SPOTTAIL SHINER	3	29	2	1	0	0	4.2 5
BLUNTNOSE MINNOW	22	19	22	0	0	0	31.0 3
SHORTHEAD REDHORSE	1	395	0	0	0	1	1.4 6.1
CHANNEL CATFISH	1	48	0	0	1	0	1.4 7
GREEN SUNFISH	25	259	23	2	0	0	35.2 4.0
PUMPKINSEED	2	28	1	1	0	0	2.8 .4
BIGEYE	5	23	5	0	0	0	7.0 .4
LARGEMOUTH BASS	7	263	0	5	2	0	9.9 4.4
BLUEGILL X PUMPKINSEED	1	8	1	0	0	0	1.4 .1
TOTALS	71	6444	54	9	3	5	
TOTAL SPECIES SAMPLING TIME (MIN)	10						# FISH/10 MIN OF EFFORT 35.5
	20						KG/10 MIN OF EFFORT 3.22

TABLE G-5 cont.

METHOD: Electrostimulation
 DATE: May 12, 13 (combined)
 ZONE: 3

page 3 of 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP WT	PCT COMP BY NO
			0-8	>8-16	>16-24		
CARP	12	36850	0	0	0	1.2	13.3
COMMON SHINER	1	5	1	0	0	0	1.1
SPOTTED SHINER	18	71	18	0	0	0	20.0
SAND SHINER	1	3	1	0	0	0	2.2
BLUNTNOSE MINNOW	4	8	4	0	0	0	0.0
FATHEAD MINNOW	1	1	1	0	0	0	4.4
WHITE SUCKER	1	16	0	1	0	0	1.1
GOLDEN REDHORSE	1	284	0	0	0	0	0.0
CHANNEL CATFISH	2	600	0	0	0	1	1.1
BROOK SILVERSIDE	13	30	13	0	0	2	2.2
GREEN SUNFISH	13	300	7	6	0	0	1.5
PUMPKINSEED	6	390	0	6	0	0	6.7
BLUEGILL	9	232	2	7	0	0	1.0
LARGEMOUTH BASS	4	71	0	4	0	0	10.0
GREEN X PUMPKINSEED	4	171	1	3	0	0	4.4
TOTALS	90	39034	48	27	0	15	
TOTAL SPECIES SAMPLING TIME (MIN)	15				# FISH/10 MIN OF EFFORT	45.0	
	20				KG/10 MIN OF EFFORT	19.52	



TABLE G-5 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL			PCT COMP BY WT
			0-8	>8-16	>16-24	
CARP	1	2400	0	0	0	1
SPOTTIN SHINER	3	10	3	0	0	11.5
BLUNTNOSE MINNOW	5	5	5	0	0	19.2
BROOK SILVERSIDE	1	2	1	0	0	3.8
GREEN SUNFISH	2	41	1	1	0	7.7
PUMPKINSEED	6	112	2	4	0	23.1
BLUEGILL	4	8	4	0	0	15.4
LARGEMOUTH BASS	4	89	0	4	0	15.4
TOTALS	26	2667	16	9	0	1
TOTAL SPECIES	8					
SAMPLING TIME (MIN)	20					

* FISH/10 MIN OF EFFORT
 KG/10 MIN OF EFFORT

13.0

1.33

TABLE G-5 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
SPOTTED SHINER	5	1.0	5	0	0	0	13.5
BLUNTNOSE MINNOW	7	1.4	7	0	0	0	18.9
FATHEAD MINNOW	1	2	1	0	0	0	2.7
WHITE SUCKER	1	48.0	0	0	0	1	14.0
GOLDEN REDHORSE	2	19.0	0	0	2	0	5.4
GREEN SUNFISH	3	23	3	0	0	0	5.6
PUMPKINSEED	5	12.9	1	4	0	0	8.1
BLUEGILL	10	17.0	4	6	0	0	13.5
LARGEMOUTH BASS	3	24.0	0	0	0	3	27.0
TOTALS	37	341.9	21	10	2	4	5.0
TOTAL SPECIES SAMPLING TIME (MIN)	9						70.2
	20						
* FISH/10 MIN OF EFFORT							
KG/10 MIN OF EFFORT							
						1.8, 5	1.71

TABLE G-5 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMF BY WT NO
			0-6	>8-16	>16-24	
CARP	1	4700	0	0	0	1
BLUNTNOSE MINNOW	5	10	5	0	0	0
SPOTTED SUCKER	2	3	2	0	0	0
BROOK SILVERSIDE	1	1	1	0	0	0
GREEN SUNFISH	5	1.64	3	2	0	0
PUMPKINSEED	1	2	1	0	0	0
BLUEGILL	4	6	4	0	0	0
LARGEMOUTH BASS	3	49	1	2	0	0
GREEN X PUMPKINSEED	1	38	0	1	0	0
GREEN X BLUEGILL	1	2	1	0	0	0
TOTALS	24	4976	16	5	0	1
TOTAL SPECIES SAMPLING TIME (MIN)	10 20					
					* FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	1.2+0 2+49



WAPORA

TABLE G-5 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY NO	WT
			0-3	>3-16	>16-24		
BLUNTNOSE MINNOW	8	2.4	8	0	0	0	30.8
GREEN SUNFISH	10	1.92	4	6	0	0	39.5
PUMPKINSEED	1	4.2	0	1	0	0	49.6
BLUEGILL	4	1.4	4	0	0	0	3.8
LARGEMOUTH BASS	1	.6	0	1	0	0	11.4
GREEN X PUMPKINSEED	1	.78	0	1	0	0	15.4
BLUEGILL X PUMPKINSEED	1	.21	0	1	0	0	3.8
TOTALS	26	3.67	16	10	0	0	55.7
TOTAL SPECIES SAMPLING TIME (MIN)	7 20		# FISH/10 MIN OF EFFORT			13.0	
			KG/10 MIN OF EFFORT			.16	

TABLE G-5 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
CARP	2	2060	0	0	1	1	2.5 41.0
SPOTFIN SHINER	3	6	3	0	0	0	3.7 .1
BLUNTNOSE MINNOW	1	2	1	0	0	0	1.2 0.0
BROOK SILVERSIDE	1	1	1	0	0	0	1.2 0.0
GREEN SUNFISH	16	508	6	10	0	0	19.6 10.0
PUMPKINSEED	18	1056	3	15	0	0	22.2 20.8
BLUEGILL	30	915	3	27	0	0	37.0 18.0
LARGEMOUTH BASS	6	236	3	2	1	0	7.4 4.7
BLACK CRAPPIE	1	40	0	1	0	0	1.2 .8
GREEN X PUMPKINSEED	3	230	0	3	0	0	3.7 4.5
TOTALS	81	5074	20	56	2	1	
TOTAL SPECIES SAMPLING TIME (MIN)	10						# FISH/10 MIN OF EFFORT
	20						KG/10 MIN OF EFFORT
							.0 .5
							2 .54



WAPORA

TABLE G-5 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: May 12, 13 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
BLUNTNOSE MINNOW	3	3	3	0	0	0
WHITE SUCKER	1	520	0	0	0	1
GREEN SUNFISH	10	1.67	7	3	0	0
PUMPKINSEED	8	3.72	0	6	0	0
BLUEGILL	6	1.10	2	4	0	0
LARGEMOUTH BASS	2	1.7	0	2	0	0
GREEN X PUMPKINSEED	1	1.0	1	0	0	0
TOTALS	31	11.99	13	17	0	1
TOTAL SPECIES SAMPLING TIME (MIN)	7 20				# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	15.5 .60

TABLE G-6

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during June, 1976.

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO WT
CARP	10	13650	0	0	0	10	14.1 91.9
BLUNTNOSSE MINNOW	38	50	38	0	0	0	53.5 .3
SHORTHEAD REDHORSE	1	1000	0	0	0	1	1.4 6.7
GREEN SUNFISH	4	44	3	1	0	0	5.6 .3
PUMPKINSEED	13	174	9	4	0	0	16.3 1.2
BLUEGILL	5	21	5	0	0	0	7.0 .1
TOTALS	71	14939	55	5	0	11	
TOTAL SPECIES SAMPLING TIME (MIN)	6	20	# FISH/10 MIN OF EFFORT			35.5	
			KG/10 MIN OF EFFORT			7.47	

TABLE G-6 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT NO WT	PCT COMP BY NO
			0-8	>8-16	>16-24		
GOLDFISH	1	222	0	0	1	0	1.3 11.9
CARP	1	1000	0	0	0	1	1.3 53.4
BLUNTNOSE MINNOW	13	13	1.3	0	0	0	17.1 .7
GREEN SUNFISH	38	388	31	7	0	0	50.0 20.7
PUMPKINSEED	12	101	1.1	1	0	0	15.8 5.4
BLUEGILL	9	99	7	2	0	0	11.8 5.3
LARGEMOUTH BASS	1	40	0	1	0	0	1.3 2.1
GREEN X PUMPKINSEED	1	6	1	0	0	0	1.3 .4
TOTALS	76	1871	63	11	1	1	
TOTAL SPECIES	8						# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT
							39.0 .94

TABLE G-6 cont.

page 3 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 3

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY WT	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO
CARP	3	5480	0	0	0	3	4.1
SPOTTIN SHINER	19	94	19	0	0	0	26.0
SAND SHINER	19	58	19	0	0	0	26.0
BLUNTNOSE MINNOW	4	15	4	0	0	0	5.5
GOLDEN REDHORSE	13	3262	0	3	3	7	31.9
SHORTHEAD REDHORSE	1	694	0	0	0	1	1.4
CHANNEL CATFISH	1	128	0	0	0	1	1.4
PUMPKINSEED	5	138	5	0	0	0	6.8
LARGEMOUTH BASS	3	348	0	0	3	0	4.1
GREEN X PUMPKINSEED	1	4	1	0	0	0	0.0
LOGPERCH	3	10	0	3	0	0	4.1
BLACKSIDE DARTER	1	5	1	0	0	0	1.4
TOTALS	73	10237	48	6	6	12	
TOTAL SPECIES SAMPLING TIME (MIN)	12		# FISH/10 MIN OF EFFORT			36.5	
	20		# 6/10 MIN OF EFFORT			5.12	

TABLE G-6 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-6	>6-16	>16-24	
SPOTFIN SHINER	5	1.8	5	0	0	12.2
BLUETNOSE MINNOW	9	2.4	9	0	0	22.0
GOLDEN REDHORSE	1	1.20	0	0	1	2.4
SHORTHEAD REDHORSE	1	1.04	0	0	1	2.4
GREEN SUNFISH	2	1.5	2	0	0	4.9
PUMPKINSEED	17	31.2	6	11	0	41.5
BLUEGILL	2	.6	2	0	0	4.9
LARGEMOUTH BASS	4	4.1	0	4	0	9.8
TOTALS	41	64.0	24	15	2	6.4
TOTAL SPECIES	8					
SAMPLING TIME (MIN)	20					
					# FISH/10 MIN OF EFFORT	20.5
					KG/10 MIN OF EFFORT	.32

TABLE G-6 cont.

METHOD: Electrofishing
DATE: June 14, 15 (combined)
ZONE: 5

TABLE G-6 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY NO WT	
			0-8	>8-16	>16-24	>24	
GREEN SUNFISH	5	111	2	3	0	0	26.3
PUMPKINSEED	4	67	2	2	0	0	21.1
BLUEGILL	9	250	4	5	0	0	15.6
BLACKSIDE DARTER	1	2	1	0	0	0	47.4
TOTALS	19	430	9	10	0	0	58.1
TOTAL SPECIES SAMPLING TIME (MIN)	4	20					9.5 4.22
							† FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT

TABLE G-6 cont.

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
SPOTTED SHIMMER	1	3	1	0	0	2.9 *3
BLUENOSE MINNOW	3	4	3	0	0	6.8 *5
GREEN SUNFISH	11	360	5	6	0	32.4 41.4
PUMPKINSEED	11	376	5	6	0	32.4 43.2
BLUEGILL	5	77	3	2	0	14.7 8.9
LARGEMOUTH BASS	1	12	0	1	0	2.9 1.4
GREEN X PUMPKINSEED	2	38	1	1	0	5.9 4.4
TOTALS	34	870	18	16	0	0
TOTAL SPECIES	7					* FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	20					KG/10 MIN OF EFFORT
						1.7 .0
						.43

TABLE G-6 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
GOLDFISH	1	410	0	0	0	1	2.4
BLUNTNOSE MINNOW	2	2	2	0	0	0	30.1
SPOTTED SUCKER	1	1.6	0	1	0	0	4.9
GREEN SUNFISH	1.6	326	1.1	5	0	0	2.4
PUMPKINSEED	1.4	476	2	1.2	0	0	1.2
BLUEGILL	6	50	5	1	0	0	39.0
GREEN X PUMPKINSEED	1	79	1	0	0	0	24.1
TOTALS	41	1361	21	19	0	1	35.0
TOTAL SPECIES SAMPLING TIME (MIN)	7	20	# FISH/10 MIN OF EFFORT			20.5	
			KG/10 MIN OF EFFORT			+68	

TABLE G-6 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: June 14, 15 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMPRY	
			0-8	>8-16	>16-24	>24	NO WT
SPOTTED SUCKER	1	11.0	0	0	1	0	1.5 4.2
GOLDEN REDHORSE	2	74.5	0	0	0	2	3.1 23.2
GREEN SUNFISH	8	178	3	5	0	0	12.3 6.7
PUMPKINSEED	33	105.4	9	24	0	0	50.9 39.9
BLUEGILL	20	53.4	4	16	0	0	30.8 20.2
LARGEMOUTH BASS	1	1.6	0	1	0	0	1.5 .7
TOTALS	65	263.9	16	46	1	2	
TOTAL SPECIES	6						32.5
SAMPLING TIME (MIN)	20						1.32

† FISH/10 MIN OF EFFORT
 KG/10 MIN OF EFFORT

TABLE G-7

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during July, 1976 .

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-6	>6-16	>16-24	
CARP	10	12200	0	0	0	1.0
BLUNTNOSE MINNOW	13	29	1.3	0	0	15.2
YELLOW BULLHEAD	1	30	0	1	0	19.7
GREEN SUNFISH	20	387	6	1.2	0	1.5
PUMPKINSEED	17	306	3	1.4	0	30.3
LARGEMOUTH BASS	5	397	3	0	1	25.8
TOTALS	66	13349	2.7	2.7	1	3.0
TOTAL SPECIES SAMPLING TIME (MIN)	6	20	# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT			33.0 6.67

TABLE G-7 cont.

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	TOTAL			PCT COMF BY NO/WT
			0-6	>6-16	>16-24	
CARP	6	13884	0	0	0	6.4
BLUNTNOSE MINNOW	26	57	26	0	0	27.7
GREEN SUNFISH	30	451	17	13	0	31.9
PUMPKINSEED	17	208	4	13	0	18.1
BLUEGILL	3	43	1	2	0	3.2
SMALLMOUTH BASS	3	196	1	1	0	3.2
LARGEMOUTH BASS	9	797	6	1	1	9.6
TOTALS	94	15636	35	30	2	7
TOTAL SPECIES SAMPLED TIME (MIN)	7					
	20					
						† FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
						47.0 7.32

TABLE G-7 cont.

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 3

page 3 of 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
NORTHERN PIKE	1	39	0	0	1	1.4
GOLDFISH	2	372	0	2	0	2.6
SPOTTAIL SHINER	1	1	1	0	0	5.5
SPOTFIN SHINER	1.3	78	1.3	0	0	1.4
SAND SHINER	4	5	4	0	0	0.0
BLUNTNOSE MINNOW	23	69	23	0	0	5.6
GOLDEN REDHORSE	10	2988	0	1	2	32.4
SHORTHEAD REDHORSE	3	2141	0	1	0	1.0
PUMPKINSEED	3	232	0	3	0	4.1
BLUEGILL	4	226	0	4	0	4.2
LARGEMOUTH BASS	5	610	1	2	1	5.6
LOGPERCH	1	1	1	0	0	3.3
BLACKSIDE DARTER	1	1	1	0	0	9.0
TOTALS	71	6763	44	11	6	1.4
TOTAL SPECIES SAMPLING TIME (MIN)	1.3	20	# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT			35.5 3.38



WAPORA

TABLE G-7 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
SPOTFIN SHINER	1	8	1	0	0	0
BLUNTNOSE MINNOW	8	23	8	0	0	29.6
GOLDEN REDHORSE	3	81.3	0	1	0	11.1
PUMPKINSEED	10	25.6	1	9	0	37.0
LARGEMOUTH BASS	5	45.5	1	2	2	18.5
TOTALS	27	155.6	11	12	2	2
TOTAL SPECIES SAMPLING TIME (MIN)	5	20	# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT			13.5 ,78

TABLE G-7 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY NO	WT
			0-8	>8-16	>16-24		
SPOTTAIL SHINER	4	8	4	0	0	0	15.4 .9
SPOTTED SUCKER	2	41	0	2	0	0	7.7 4.8
GOLDEN REDHORSE	2	213	0	1	0	1	7.7 25.1
SHORTHEAD REDHORSE	1	300	0	0	0	1	3.8 35.3
GREEN SUNFISH	6	116	1	5	0	0	23.1 13.7
PUMPKINSEED	7	113	3	4	0	0	26.9 13.3
BLUEGILL	2	14	1	1	0	0	7.7 1.6
LARGEMOUTH BASS	1	40	0	1	0	0	3.8 4.7
GREEN X PUMPKINSEED	1	4	1	0	0	0	3.8 .5
TOTALS	26	849	10	14	0	2	
TOTAL SPECIES SAMPLING TIME (MIN)	9	20				# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	13.0 .42

TABLE G-7 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	10	3	10	0	0	0	26.3 *2
GOLDEN REDHORSE	2	601	1	0	0	1	5.3 37.0
SHORTHEAD REDHORSE	1	0	1	0	0	0	2.6 0.0
ROCK BASS	3	282	0	2	1	0	7.9 17.4
GREEN SUNFISH	5	85	3	2	0	0	13.2 5.2
PUMPKINSEED	6	262	0	5	1	0	15.8 16.1
BLUEGILL	2	18	2	0	0	0	5.3 1.1
LARGEMOUTH BASS	6	333	5	0	0	1	15.8 20.5
BLUEGILL X PUMPKINSEED	1	37	0	1	0	0	2.6 2.3
BLACKSIDE DARTER	2	0	2	0	0	0	5.3 .1
TOTALS	38	1623	24	10	2	2	
TOTAL SPECIES	10						* FISH/10 MIN OF EFFORT 19.0
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT .81



WAPORA

TABLE G-7 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 7

SPECIES LIST	TOTAL		LENGTH (CM)			PCT NO WT
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	
SPOTTAIL SHINER	5	3	5	0	0	0
ROCK BASS	2	198	0	1	1	11.1 .3
GREEN SUNFISH	13	281	4	9	0	4.4 19.0
PUMPKINSEED	11	194	3	6	0	26.9 27.0
BLUEGILL	8	286	1	7	0	24.4 18.6
LARGEMOUTH BASS	4	49	3	1	0	17.8 27.4
GREEN X PUMPKINSEED	2	31	0	2	0	8.9 4.7
TOTALS	45	1042	16	26	1	4.4 3.0
TOTAL SPECIES SAMPLED TIME (MIN)	7					# FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT
						22.5 .52

TABLE G-7 cont.

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO
SPOTTAIL SHINER	2	3	2	0	0	0	2.9 *3
BLUNTNOSE MINNOW	20	33	20	0	0	0	29.4 *3.0
FATHEAD MINNOW	1	0	1	0	0	0	1.5 *1
SPOTTED SUCKER	2	73	0	2	0	0	2.9 *6.7
GREEN SUNFISH	21	427	3	18	0	0	30.9 *38.9
PUMPKINSEED	16	464	2	12	1	0	22.1 *42.3
BLUEGILL	2	5	2	0	0	0	2.9 *5
LARGEMOUTH BASS	2	3	2	0	0	0	2.9 *3
GREEN X PUMPKINSEED	2	23	1	1	0	0	2.9 *2.1
BLUEGILL X PUMPKINSEED	1	64	0	1	0	0	1.5 *5.6
TOTALS	68	1096	33	34	1	0	
TOTAL SPECIES SAMPLING TIME (MIN)	10				# FISH/10 MIN OF EFFORT	34.0	
	20				KG/10 MIN OF EFFORT		*55

TABLE G-7 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: July 22, 23 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO WT
NORTHERN PIKE	1	20	0	1	0	0	3.8 3.0
SPOTTAIL SHINER	3	1	3	0	0	0	11.5 .1
SPOTTED SUCKER	1	35	0	1	0	0	3.0 5.2
GREEN SUNFISH	2	54	1	1	0	0	7.7 8.0
PUMPKINSEED	17	507	2	15	0	0	65.4 75.1
BLUEGILL	1	55	0	1	0	0	3.8 8.1
LARGEMOUTH BASS	1	3	1	0	0	0	3.8 .4
TOTALS	26	675	7	19	0	0	
TOTAL SPECIES SAMPLING TIME (MIN)	7						# FISH/10 MIN OF EFFORT
	20						KG/10 MIN OF EFFORT
							.34 .34

TABLE G-8

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during August, 1976.

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 1

SPECIES LIST	TOTAL		LENGTH (CM)			FCT	
	TOTAL NO	WEIGHT GM	0-6	>6-16	>16-24	>24	COMP BY NO WT
CARP	7	9500	0	0	0	7	5.4 85.2
SPOTTIN SHINER	3	8	3	0	0	0	2.3 .1
BLUNTNOSE MINNOW	45	109	45	0	0	0	34.6 1.0
SHORthead REDHORSE	1	1	1	0	0	0	.8 0.0
BROOK SILVERSIDE	1	0	1	0	0	0	.8 0.0
GREEN SUNFISH	14	220	12	2	0	0	10.8 2.0
PUMPKINSEED	35	398	34	1	0	0	26.9 3.6
BLUEGILL	2	57	0	2	0	0	1.5 .5
LARGEMOUTH BASS	21	857	13	6	0	0	16.2 7.7
BLACKSIDE DARTER	1	1	1	0	0	0	.8 0.0
TOTALS	130	11151	110	13	0	7	
TOTAL SPECIES SAMPLING TIME (MIN)	10	20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
							65.0 5.58

TABLE G-8 cont.

page 2 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	TOTAL LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
CARP	9	10050	0	0	0	9	4.7
SPOTTIN SHINER	10	48	10	0	0	0	5.3
BLUNTNOSE MINNOW	21	42	21	0	0	0	4.4
BROOK SILVERSIDE	2	1	2	0	0	0	3
ROCK BASS	1	85	0	1	0	0	1.1
GREEN SUNFISH	54	890	45	9	0	0	0.0
PUMPKINSEED	48	717	43	5	0	0	28.4
BLUEGILL	6	98	3	3	0	0	25.3
LARGEMOUTH BASS	34	682	25	9	0	0	3.2
BLACK CRAPPIE	1	7	1	0	0	0	0.8
GREEN X PUMPKINSEED	3	90	2	1	0	0	5.3
BLUEGILL X PUMPKINSEED	1	96	0	1	0	0	1.1
TOTALS	190	12606	152	29	0	9	4.7
TOTAL SPECIES SAMPLING TIME (MIN)	12		# FISH/10 MIN OF EFFORT			95.0	
	20		KG/10 MIN OF EFFORT			6.40	

TABLE G-8 cont.

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 3

SPECIES LIST	TOTAL		LENGTH (CM)			FCT		COMP BY	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO	WT	
CARP	3	5300	0	0	0	3	3	35.0	
SPOTTED SHINER	3	5	3	0	0	0	3	0.0	
BLUENTNOSE MINNOW	10	20	10	0	0	0	10	1	
NORTHERN HOG SUCKER	2	705	0	0	1	1	2	3.3	
SPOTTED SUCKER	1	31	0	1	0	0	1	0	
GOLDEN REDHORSE	26	9819	0	4	3	19	26	3	
CHANNEL CATFISH	2	3150	0	0	0	2	2	14.9	
BROOK STICKLEBACK	1	1	1	0	0	0	1	0	0.0
PUMPKINSEED	18	579	8	10	0	0	18	2	2.7
BLUEGILL	4	232	0	4	0	0	4	0	1.1
SMALLMOUTH BASS	1	115	0	1	0	0	1	0	.5
LARGEMOUTH BASS	15	1106	4	9	2	0	15	2	5.2
BLACK CRAPPIE	1	38	0	1	0	0	1	0	.2
GREEN X HUNTERINEED	2	62	0	2	0	0	2	0	.3
JOHNNY DARTER	2	2	2	0	0	0	2	0	0.0
LOGGERCH	7	26	6	1	0	0	7	1	.1
BLACKSIDE DARTER	1	17	1	0	0	0	1	0	.1
TOTALS	99	24208	35	33	6	25			
TOTAL SPECIES SAMPLING TIME (MIN)	17						# FISH/10 MIN OF EFFORT	49.5	
	20						KG/10 MIN OF EFFORT	10.60	



METHOD: Electrofishing
DATE: August 9, 10 (combined)
ZONE: 4

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
BLUNTNOSE MINNOW	5	7	5	0	0	11.6
SPOTTED SUCKER	4	704	0	3	0	9.3
GOLDEN REDHORSE	3	841	1	0	0	29.9
SHORthead REDHORSE	1	340	0	0	0	35.8
GREEN SUNFISH	2	37	2	0	0	2.3
PUMPKINSEED	6	238	3	5	0	14.5
BLOEGILL	3	100	1	2	0	4.7
LARGEMOUTH BASS	15	57	15	0	0	1.6
BLOEGILL X PUMPKINSEED	1	27	0	1	0	0.1
BLACKTIE DARTER	1	1	1	0	0	0.1
TOTALS	43	2352	28	11	0	4
TOTAL SPECIES SAFELING TIME (MIN)	10					# FISH/10 MIN OF EFFORT
	20					KG/10 MIN OF EFFORT
						21.5
						1.18

TABLE G-8 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 5

SPECIES LIST	TOTAL		LENGTH (CM)			PCT	
	TOTAL NO.	WEIGHT (GM)	0-8	>8-16	>16-24	>24	COMF BY NO. WT
CARP	2	4000	0	0	0	2	2.2 60.2
BLUNTNOSE MINNOW	2	2	2	0	0	0	2.2 0.0
WHITE SUCKER	1	500	0	0	0	1	1.1 7.5
SPOTTED SUCKER	13	965	0	12	0	1	1.4 6.5
GREEN SUNFISH	13	362	4	9	0	0	1.4 6.5
PUMPKINSEED	33	559	24	9	0	0	37.1 8.4
BLUEGILL	6	96	4	2	0	0	6.7 1.4
LARGEMOUTH BASS	17	104	17	0	0	0	19.1 1.6
GREEN X BLUEGILL	1	28	0	1	0	0	1.1 .4
BLUEGILL X PUMPKINSEED	1	26	0	1	0	0	1.1 .4
TOTALS	69	6642	51	34	0	4	
TOTAL SPECIES	10						* FISH/10 MIN OF EFFORT 44.5
SAMPLING TIME (MIN)	20						KG/10 MIN OF EFFORT 3.32

TABLE G-8 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT
			0-3	3-6	>6-24		
SPOTTED SUCKER	3	604	0	2	0	1	4.1
GOLDEN REDHORSE	5	1591	2	0	2	3	17.5
ROCK BASS	3	105	1	2	0	0	46.0
GREEN SUNFISH	12	225	5	7	0	0	4.1
PUMPKINSEED	25	636	14	11	0	0	3.0
BLUEGILL	4	36	3	1	0	0	16.2
LARGEMOUTH BASS	17	208	15	2	0	0	6.5
GREEN X PUMPKINSEED	2	40	1	1	0	0	18.4
BLUEGILL X PUMPKINSEED	1	12	1	0	0	0	5.4
BLACKSIDE DARTER	2	3	2	0	0	0	1.0
TOTALS	74	3460	44	26	0	4	6.0
TOTAL SPECIES SAMPLING TIME (MIN)	10 20						# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT
							37.0 1.73

TABLE G-8 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL LENGTH (CM)			FACT BY WT	
			0-8	>8-16	>16-24	>24	NO
NORTHERN PIKE	1	45	0	0	1	0	.9
BLUNTNOSSE MINNOW	6	12	6	0	0	0	5.2
WHITE SUCKER	1	800	0	0	0	1	.9
GREEN SUNFISH	28	711	14	14	0	0	24.3
PUMPKINSEED	46	491	37	9	0	0	40.0
BLUEGILL	9	173	7	2	0	0	7.8
LARGEMOUTH BASS	22	1157	19	3	0	0	19.1
JOHNNY DARTER	1	1	1	0	0	0	.9
BLACKSIDE DARTER	1	1	1	0	0	0	.9
TOTALS	115	3391	85	28	1	1	
TOTAL SPECIES SAMPLING TIME (MIN)	9	20					
						# FISH/10 MIN OF EFFORT	57.5
						KG/10 MIN OF EFFORT	1.70

TABLE G-8 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT
			0-8	>8-16	>16-24		
BLUNTNOSE MINNOW	16	68	1.6	0	0	0	16.7
SPOTTED SUCKER	1	1.25	0	1	0	0	1.0
ROCK BASS	1	4.4	0	1	0	0	1.0
GREEN SUNFISH	30	52.9	2.4	6	0	0	3.9
PUMPKINSEED	26	21.1	2.6	2	0	0	31.3
BLUEGILL	11	8.9	9	2	0	0	29.2
LARGEMOUTH BASS	7	4.4	6	1	0	0	11.5
BLACK CRAPPIE	1	2	1	0	0	0	7.3
GREEN X PUMPKINSEED	1	1.0	1	0	0	0	1.0
TOTALS	96	112.2	83	13	0	0	1.2
TOTAL SPECIES SAMPLING TIME (MIN)	9 20					# FISH/10 MIN OF EFFORT KG/10 MIN OF EFFORT	48.0 .56

TABLE G-8 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: August 9, 10 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO
SPOTTED SUCKER	2	815	0	0	1	1	3.4
GREEN SUNFISH	10	205	4	6	0	0	16.9
PUMPKINSEED	35	954	20	15	0	0	59.3
BLUEGILL	4	97	2	2	0	0	6.8
LARGEMOUTH BASS	5	99	4	1	0	0	8.5
GREEN X PUMPKINSEED	1	15	1	0	0	0	1.7
BLUEGILL X PUMPKINSEED	2	41	1	1	0	0	3.4
TOTALS	59	2226	32	25	1	1	
TOTAL SPECIES SAMPLING TIME (MIN)	7	20	# FISH/10 MIN OF EFFORT			29.5	
			KG/10 MIN OF EFFORT			1.1	

TABLE G-9

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during September, 1975,
 March, April, May, June, July and August, 1976.

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY WT
			0-8	>8-16	>16-24	>24	
GOLDFISH	1	250	0	0	1	0	*1,2
CARP	60	102250	0	0	0	60	6,3
SPOTTAIL SHINER	1	4	1	0	0	0	0,0
SPOTFIN SHINER	3	6	3	0	0	0	0,0
BLUNTNOSE MINNOW	626	638	626	0	0	0	65,9
FATHEAD MINNOW	2	4	2	0	0	0	0,0
WHITE SUCKER	2	607	1	0	0	1	*2,6
GOLDEN REDHORSE	1	700	0	0	0	1	*1,6
SHORTHEAD REDHORSE	2	1001	1	0	0	1	*2,9
YELLOW BULLHEAD	1	30	0	1	0	0	0,0
BROOK SILVERSIDE	14	23	14	0	0	0	1,5
GREEN SUNFISH	66	789	50	16	0	0	6,9
PUMPKINSEED	78	1324	51	26	1	0	8,2
BLUEGILL	45	250	42	33	0	0	4,7
SMALLMOUTH BASS	1	10	1	0	0	0	*1,2
LARGEMOUTH BASS	40	2232	22	14	1	3	4,2
BLUEGILL X PUMPKINSEED	4	12	4	0	0	0	*4,0
JOHNNY DARTER	1	2	1	0	0	0	0,0
LOGPERCH	1	3	1	0	0	0	*1,0
BLACKSIDE DARTER	1	1	1	0	0	0	0,0
TOTALS	250	110141	621	60	3	66	
TOTAL SPECIES	20						*39,4
SAMPLING TIME (MIN)	160						6,88
# FISH/10 MIN OF EFFORT							
KG/10 MIN OF EFFORT							

TABLE G-9 cont.

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 2

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO	WT
GOLDFISH	1	222	0	0	1	0	*1	*3
CARP	45	65434	0	0	0	45	6*1	83*3
SPOTTAIL SHINER	3	29	2	1	0	0	*4	0*0
SPOTFIN SHINER	10	48	10	0	0	0	1*4	*1
MINNIE SHINER	1	1	1	0	0	0	*1	0*0
BLUNTNOSE MINNOW	152	230	152	0	0	0	20*6	*3
FATHEAD MINNOW	4	5	4	0	0	0	*5	0*0
GOLDEN REDHORSE	1	800	0	0	0	0	*1	1*0
SHORTHEAD REDHORSE	1	395	0	0	0	1	*1	*5
YELLOW BULLHEAD	4	236	1	3	0	0	*5	*3
CHANNEL CATFISH	1	48	0	0	1	0	*1	*1
BROOK SILVERSIDE	51	75	51	0	0	0	6*9	*1
ROCK BASS	1	85	0	1	0	0	*1	*1
GREEN SUNFISH	221	2560	184	37	0	0	29*9	3*3
PUMPKINSEED	64	1488	64	23	0	0	11*4	1*5
BLUEGILL	69	650	55	13	0	0	9*2	*8
SMALLMOUTH BASS	4	220	1	2	1	0	*5	*3
LARGEMOUTH BASS	75	5791	37	26	5	7	10*1	7*4
BLACK CRAPPIE	3	278	1	1	1	0	*4	*4
GREEN X PUMPKINSEED	5	99	4	1	0	0	*7	*1
BLUEGILL X PUMPKINSEED	4	111	3	1	0	0	*5	*1
TOTALS	739	78510	567	109	9	54		
TOTAL SPECIES	21						# FISH/10 MIN OF EFFORT	46*2
SAMPLING TIME (MIN)	160						KG/10 MIN OF EFFORT	4*91

TABLE G-9 cont.

page 3 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	2	414	0	0	1	1	*3	*3
GULFISH	5	1479	0	0	5	0	*8	*9
CARP	41	114270	0	0	33	0	70	6
COMMON SHINER	1	5	1	0	0	0	*2	0
SPOTTAIL SHINER	5	27	5	0	0	0	*0	0
ROSYFACE SHINER	1	0	1	0	0	0	*2	0
SPOTFIN SHINER	57	255	57	0	0	0	*4	*2
SAND SHINER	69	231	69	0	0	0	14	6
WHITE SHINER	1	3	1	0	0	0	*2	0
BLUENOSE HINDW	118	330	118	0	0	0	19	4
FATHEAD HINDW	15	23	15	1	0	0	2	0
WHITE SUCKER	6	3269	1	1	0	4	1	0
NORTHERN HOG SUCKER	4	1063	1	0	1	2	*7	*7
SPOTTED SUCKER	2	71	0	2	0	0	*3	0
GOLDEN REDHORSE	57	18662	0	8	10	39	*4	11
SHORTHEAD REDHORSE	55	3382	0	1	1	3	*6	2
CHANNEL CATFISH	7	4392	0	0	1	6	1	2
BROOK SILVERSIDE	25	50	25	0	0	0	4	1
BROOK STICKLEBACK	1	1	1	0	0	0	*2	0
GREEN SUNFISH	14	301	8	6	0	0	2	3
PUMPKINSEED	39	1766	13	26	0	0	6	4
BLUEGILL	32	1377	4	28	0	0	5	3
SMALLMOUTH BASS	1	115	0	1	0	0	*2	*1
LARGEMOUTH BASS	45	9196	5	19	15	6	7	4
BLACK CRAPPIE	10	1604	1	4	5	0	1	6
GREEN X PUMPKINSEED	7	238	2	5	0	0	1	2
JOHNNY DARTER	2	2	2	0	0	0	*3	0
LOGPERCH	13	139	7	6	0	0	2	1
BLACKSIDE DARTER	3	23	3	0	0	0	*5	0
TOTALS	606	161892	360	107	42	99		
TOTAL SPECIES	29						# FISH/10 MIN OF EFFORT	38.0
SAMPLING TIME (MIN)	160						KG/10 MIN OF EFFORT	10.12



WAPORA

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 4

TABLE G-9 cont.

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT NO
			0-8	>8-16	>16-24	
CARP	9	32600	0	0	0	1.9
SPOTTED SHINER	24	53	24	0	0	5.1
SAND SHINER	7	6	7	0	0	1.5
MIMIC SHINER	3	3	3	0	0	0.0
BLOUNTNOSE MINNOW	187	399	187	0	0	4.0
FATHEAD MINNOW	4	4	4	0	0	0.0
WHITE SUCKER	2	907	1	0	0	0.4
SPOTTED SUCKER	14	3250	55	4	0	2.1
GOLDEN REDHORSE	8	2209	1	1	5	7.5
SHORTHEAD REDHORSE	2	444	0	1	1	1.0
CHANNEL CATFISH	1	6	1	0	0	0.0
BROOK SILVERSTIDE	19	27	19	0	0	4.1
GREEN SUNFISH	36	640	27	9	0	7.7
PUMPKINSEED	65	1308	26	39	0	13.9
BLUEGILL	39	347	31	8	0	8.4
LARGEMOUTH BASS	33	802	48	15	0	7.1
GREEN X PUMPKINSEED	14	143	8	35	0	2.4
GREEN X BLUEGILL	1	1.3	1	0	0	0.0
BLUEGILL X PUMPKINSEED	1	27	0	1	0	0.2
BLACKSIDE DARTER	1	1	1	0	0	0.0
TOTALS	467	43493	364	78	4	21
TOTAL SPECIES	20				# FISH/10 MIN OF EFFORT	29.2
SAMPLING TIME (MIN)	160				KG/10 MIN OF EFFORT	2.70

TABLE G-9 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 5

SPECIES LIST	TOTAL NO	WEIGHT (GM)	LENGTH (CM)			PCT CUM BY WT
			0-8	>8-16	>16-24	
NORTHERN PIKE	2	1085	0	0	1	*5
CARP	7	33400	0	0	0	2*3
COMMON SHINER	1	2	1	0	0	2*2
SPOTTAIL SHINER	4	6	4	0	0	0*0
SPOTFIN SHINER	7	13	7	0	0	0*0
SAND SHINER	7	4	7	0	0	1*0
BLUNTNOSE MINNOW	77	132	77	0	0	1*7
FATHEAD MINNOW	2	3	2	0	0	19*1
WHITE SUCKER	2	980	0	0	0	0*0
SPOTTED SODGER	21	2375	2	16	0	5*5
GOLDEN REDHORSE	4	403	0	1	2	5*2
SHORTHEAD REDHORSE	1	300	0	0	1	1*0
YELLOW BULLHEAD	1	150	0	0	1	0*2
BROOK SILVERSIDE	11	20	11	0	0	2*7
GREEN SUNFISH	59	1270	31	28	0	0*0
PUMPKINSEED	75	1345	45	30	0	14*6
BLUEGILL	73	673	56	17	0	13*6
LARGEMOUTH BASS	40	4409	26	5	4	18*1
BLACK CRAPPIE	3	51	2	1	0	9*9
GREEN X PUMPKINSEED	2	7	2	0	0	0*4
GREEN X BLUEGILL	1	28	0	1	0	0*0
BLUEGILL X PUMPKINSEED	2	30	1	1	0	0*1
TOTALS	404	46692	274	100	8	22
TOTAL SPECIES	22					# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	160					KG/10 MIN OF EFFORT
						25*2
						2*92

TABLE G-9 cont.

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			<8-16	>16-24	>24	NO	%
NORTHERN PIKE	1	109	0	0	1	0	5
CARP	4	12490	0	0	4	1	3
SPOTFIN SHINER	2	3	2	0	0	0	0
SAND SHINER	2	3	2	0	0	0	0
MINnow SHINER	1	1	1	0	0	0	0
BLUNTNOSE MINNOW	101	166	101	0	0	28	7
FATHEAD MINNOW	14	10	14	0	0	4	0
WHITE SUCKER	2	12	2	0	0	6	1
SPOTTED SUCKER	7	616	4	2	1	2	0
GOLDEN REDHORSE	7	2192	3	0	4	2	0
SHORTHEAD REDHORSE	1	0	1	0	0	0	0
BROOK SILVERSIDE	10	17	10	0	0	2	8
ROCK BASS	8	809	1	5	2	0	5
GREEN SUNFISH	54	1157	30	24	0	0	3
PUMPKINSEED	45	1229	20	24	1	0	8
BLUEGILL	44	575	34	10	0	0	12
LARGEMOUTH BASS	35	792	22	12	0	1	9
GREEN X PUMPKINSEED	5	94	33	2	0	0	4
GREEN X BLUEGILL	2	22	2	0	0	0	6
BLUEGILL X PUMPKINSEED	2	49	1	1	0	0	2
BLACKSIDE DARTER	5	5	5	0	0	1	4
TOTALS	352	26377	256	50	4	10	
TOTAL SPECIES	21					# FISH/10 MIN OF EFFORT	22.0
SAMPLING TIME (MIN)	140					KG/10 MIN OF EFFORT	1.27

TABLE G-9 cont..

page 7 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 7

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO.	COMP BY WT
			0-8	8-16	>16-24		
NORTHERN PIKE	1	45	0	0	1	0	*3 *6
SPOTTAIL SHINER	5	3	5	0	0	0	0,0
SPOTFIN SHINER	1	3	1	0	0	*3	0,0
BLUNTNOSE MINNOW	31	71	31	0	0	9,9	*9
WHITE SUCKER	2	135	0	0	2	*6	14,2
SPOTTED SUCKER	3	498	1	0	2	1,0	*6,2
BROOK SILVERSIDE	20	28	20	0	0	6,4	*4
ROCK BASS	2	198	0	1	1	0	2,5
GREEN SUNFISH	91	2313	44	47	0	0	29,0
PUMPKINSEED	77	1433	47	30	0	0	24,5
BLUEGILL	44	867	25	19	0	0	17,9
LARGEMOUTH BASS	29	1244	22	7	0	0	14,0
GREEN X PUMPKINSEED	5	147	1	4	0	0	15,5
BLUEGILL X PUMPKINSEED	1	21	0	1	0	1,6	1,6
JOHNNY DARTER	1	1	1	0	0	*3	*3
BLACKSIDE DARTER	1	1	1	0	0	*3	0,0
TOTALS	314	8009	199	109	4	2	
TOTAL SPECIES							* FISH/10 MIN OF EFFORT
SWIMMING TIME (MIN)		16					KG/10 MIN OF EFFORT
		160					19,6
							,50



WAPORA

TABLE G-9 cont.

Page 8 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 8

SPECIES LIST	TOTAL		LENGTH (CM)			FISH		COMP BY WT	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO	WT	
GOLDFISH	1	410	0	0	0	1	1	1	1
CARP	9	19180	0	0	1	8	1	2	51.2
SPOTTAIL SHINER	2	3	2	0	0	0	3	0	0
SPOTFIN SHINER	7	19	9	0	0	0	2	1	1
SAND SHINER	1	9	1	0	0	0	1	0	0
BLUNTNOSE MINNOW	109	266	109	0	0	0	15	1	7
FATHEAD MINNOW	1	0	1	0	0	0	1	0	0
WHITE SUEKER	1	19	0	1	0	0	1	1	6
SPOTTED SUCKER	4	214	0	4	0	0	6	6	3.2
GOLDEN REDHORSE	2	1185	0	0	0	0	2	3	2
BRUSH SILVERSIDE	43	58	43	0	0	0	6	0	1
ROCK BASS	2	64	0	2	0	0	3	2	2
GREEN SURFISH	176	3082	114	62	0	0	24	4	9.2
PUMPKINSEED	113	4099	42	70	1	0	15	7	10.9
BLUEGILL	159	4370	67	92	0	0	22	1	11.7
LARGEMOUTH BASS	35	2625	18	12	2	0	3	4	7.0
BLACK CRAPPIE	6	576	1	4	1	0	6	1	5
GREEN X PUMPKINSEED	12	505	5	7	0	0	1	7	1.3
BLUEGILL X PUMPKINSEED	36	771	6	26	0	0	5	0	2.1
TOTALS	721	37478	420	282	5	14			
TOTAL SPECIES	19						# FISH/10 MIN OF EFFORT	43.1	
SAMPLING TIME (MIN)	160						KG/10 MIN OF EFFORT	2.34	

TABLE G-9 cont.

page 9 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined, except February 12, 13)
 ZONE: 9

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT NO.
			<8	8-16	>16-24	
NORTHERN PIKE	1	20	0	1	0	*3
CARP	3	10700	0	0	0	45, 4
SPOTTED SHIMMER	3	1	3	0	0	*3
BLUENOSE MINNOW	10	11	1.0	0	0	0, 0
WHITE SUCKER	1	520	0	0	0	2, 6
SPOTTED SUCKER	7	1477	1	2	2	*3, 2
GOLDEN REDHORSE	2	745	0	0	2	1, 6
BROWN BULLHEAD	1	280	0	1	0	*5, 1
BROWN SILVERSIDE	4	4	0	0	0	*3, 1
GREEN SUNFISH	73	1625	45	28	0	1, 0
PUMPKINSEED	144	5207	35	107	2	18, 6
BLUEGILL	116	2758	38	78	0	37, 1
LARGEMOUTH BASS	17	345	7	10	0	21, 7
GREEN X PUMPKINSEED	3	41	3	0	0	29, 9
GREEN X BLUEGILL	1	48	0	1	0	1, 4
BLUEGILL X PUMPKINSEED	2	41	1	1	0	*3, 2
TOTALS	388	24024	147	228	5	*5, 2
TOTAL SPECIES	16					* FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	160					16/10 MIN OF EFFORT

TABLE G-10

Summary of electrofishing in the Grand River at fishing zones 1 through 9 during September, 1975,
 February, March, April, May, June, July and August, 1976.

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 1

SPECIES LIST	TOTAL		LENGTH (CM)				FCT COMP BY	
	TOTAL NO	WEIGHT (GM)	0-6	>6-16	>16-24	>24	NO WT	
GOLDFISH	1	250	0	0	1	0	1	,2
CARP	60	102250	0	0	0	60	6,3	92,8
SPOTTAIL SHINER	1	4	1	0	0	0	,1	0,0
SPOTFIN SHINER	3	8	3	0	0	0	,3	0,0
BLUNTNOSE MINNOW	626	638	626	0	0	0	65,9	,6
FATHEAD MINNOW	2	4	2	0	0	0	,2	0,0
WHITE SUCKER	2	607	1	0	0	1	,2	,6
GOLDEN REDHORSE	1	700	0	0	0	1	,1	,6
SHORTHEAD REDHORSE	2	1001	1	0	0	1	,2	,9
YELLOW BULLHEAD	1	30	0	1	0	0	,1	0,0
BROOK SILVERSIDE	14	23	14	0	0	0	1,5	0,0
GREEN SUNFISH	66	789	50	16	0	0	6,9	,7
PUMPKINSEED	73	1324	51	26	1	0	8,2	1,2
BLUEGILL	45	250	42	3	0	0	4,7	,2
SHALLOMOUTH BASS	1	10	1	0	0	0	,1	0,0
LARGEMOUTH BASS	40	2232	22	14	1	3	4,2	2,0
BLUEGILL X PUMPKINSEED	4	12	4	0	0	0	,4	0,0
JOHNNY DARTER	1	2	1	0	0	0	,1	0,0
LOGPERCH	1	3	1	0	0	0	,1	0,0
BLACKSIDE DARTER	1	1	1	0	0	0	,1	0,0
TOTALS	950	110141	621	60	3	66		
TOTAL SPECIES	20						† FISH/10 MIN OF EFFORT	59,4
SAMPLING TIME (MIN)	160						KG/10 MIN OF EFFORT	6,88

TABLE G-10 cont.

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 2

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			>24	PCT CONFRY NO WT
			0-8	>8-16	>16-24		
GOLDFISH	1	222	0	0	1	0	*.1 *3
CARP	45	65434	0	0	0	45	*.1 83.3
SPOTTAIL SHINER	3	29	2	1	0	0	*.4 0.0
SPOTTIN SHINER	10	48	10	0	0	0	1.4 *1
WHITE SHINER	1	1	1	0	0	0	0.0
BLUNTNOSE MINNOW	152	230	152	0	0	0	20.6 *3
FATHEAD MINNOW	4	5	4	0	0	0	*.5 0.0
GOLDEN REDHORSE	1	800	0	0	0	0	*.1 1.0
SHORTHEAD REDHORSE	1	395	0	0	0	1	*.1 *5
YELLOW BULLHEAD	4	236	1	3	0	0	*.5 *3
CHANNEL CATFISH	1	48	0	0	1	0	*.1 *1
BROOK SILVERSIDE	51	75	51	0	0	0	*.9 *1
ROCK BASS	1	85	0	1	0	0	*.1 *1
GREEN SUNFISH	221	2560	184	37	0	0	29.9 3.3
PUMPKINSEED	84	1188	61	23	0	0	11.4 1.5
BLUEGILL	68	650	55	13	0	0	*.2 *8
SMALLMOUTH BASS	4	220	1	2	1	0	*.5 *3
LARGEMOUTH BASS	75	5791	37	26	5	7	10.1 7.4
BLACK CRAPPIE	3	278	1	1	1	0	*.4 *4
GREEN X PUMPKINSEED	5	97	4	1	0	0	*.7 *1
BLUEGILL X PUMPKINSEED	4	111	3	1	0	0	*.5 *1
TOTALS	739	76510	567	167	9	54	
TOTAL SPECIES SAMPLING TIME (MIN)	21	160					# FISH/10 MIN OF EFFORT RG/10 MIN OF EFFORT 46.2 4.91

TABLE G-10 cont.

page 3 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 3

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	TOTAL			LENGTH (CM)	COMF BY NO.	EFFECT WT
			0-8	>8-16	>16-24			
NORTHERN PIKE	2	414	0	0	1	1	.3	.2
GOLDFISH	6	2219	0	0	5	1	.9	.8
CARP	76	212470	0	0	3	73	11.4	79.7
COMMON SHINER	1	5	1	0	0	0	.2	0.0
SPOTTAIL SHINER	5	27	5	0	0	0	.8	0.0
ROSYFACE SHINER	4	0	1	0	0	0	.2	0.0
SPOTTIN SHINER	57	255	57	0	0	0	8.6	.1
SAND SHINER	89	231	89	0	0	0	13.4	.1
MIC SHINER	1	3	1	0	0	0	.2	0.0
BLUNTNOSE MINNOW	19	331	119	0	0	0	47.9	.1
FATHEAD MINNOW	15	23	15	0	0	0	2.3	0.0
WHITE SUCKER	6	3269	1	1	0	4	.9	1.2
NORTHERN HOG SUCKER	4	1063	1	0	1	2	.6	.4
SPOTTED SUCKER	2	71	0	2	0	0	.3	0.0
GOLDEN REDHORSE	62	22082	0	8	11	43	9.3	8.3
SHORthead REDHORSE	5	3382	0	1	1	3	.8	1.5
CHANNEL CATFISH	7	4392	0	0	1	6	1.1	1.6
BROOK SILVERSTIDE	25	50	25	0	0	0	3.8	0.0
BROOK STICKLEBACK	1	1	1	0	0	0	.2	0.0
ROCK BASS	4	403	0	3	0	1	.6	.2
GREEN SUNFISH	14	301	6	6	0	0	2.1	.1
PUMPKINSEED	43	2047	13	29	1	0	6.5	.8
BLUEGILL	34	1517	4	30	0	0	5.1	.6
SMALLMOUTH BASS	1	115	0	1	0	0	.2	0.0
LARGEMOUTH BASS	47	8786	5	19	17	6	7.1	3.3
BLACK CRAPPIE	14	2844	1	4	9	0	2.1	1.1
GREEN X PUMPKINSEED	7	238	2	5	0	0	1.1	.1
JOHNNY DARTER	2	2	0	0	0	0	.3	0.0
LOGPERCH	13	139	7	6	0	0	2.0	.1
BLACKSIDE DARTER	3	23	3	0	0	0	.5	0.0
TOTALS		666	266707	361	115	50	140	
TOTAL SPECIES		30				# FISH/10 MIN OF EFFORT	33.3	
SAMPLING TIME (MIN)		260				KG/10 MIN OF EFFORT	13.34	

TABLE G-10 cont.

page 4 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCT BY NO	
			0-8	>8-16	>16-24	>24	WT	
NORTHERN PIKE	1	1000	0	0	0	1	.2	1.8
CARP	13	44200	0	0	0	13	2.7	77.4
SPOTTED SHINER	24	53	24	0	0	0	4.9	.4
SAND SHINER	13	20	13	0	0	0	2.7	0.0
MICRO SHINER	3	3	0	0	0	0	.6	0.0
BLUNTNOSE MINNOW	189	400	189	0	0	0	38.4	.7
FATHEAD MINNOW	4	4	4	0	0	0	.8	0.0
WHITE SUCKER	2	907	1	0	0	1	.4	1.6
SPOTTED SUCKER	15	3810	5	4	0	6	3.1	6.7
GOLDEN RETHORSE	6	2209	1	1	1	5	1.6	3.9
SHORTHEAD REDHORSE	2	444	0	0	1	1	.4	.6
CHANNEL CATFISH	1	6	1	0	0	0	.2	0.0
BROOK SILVERSTIDE	20	29	20	0	0	0	4.1	.4
GREEN SUNFISH	37	672	27	10	0	0	7.6	1.2
PUMPKINSEED	66	1336	26	40	0	0	13.5	2.3
BLUEGILL	42	384	33	9	0	0	8.6	.7
LARGEMOUTH BASS	35	1200	18	14	0	2	2.2	2.1
BLACK CRAPPIE	1	230	0	0	1	0	.2	.4
GREEN X PUMPKINSEED	11	143	8	3	0	0	2.2	.3
GREEN X BLUEGILL	1	13	4	0	0	0	.2	0.0
BLUEGILL X PUMPKINSEED	1	27	0	1	0	0	.2	0.0
BLACKSIDE DARTER	1	1	1	0	0	0	.2	0.0
TOTALS	489	57096	374	82	6	27		
TOTAL SPECIES	22						* FISH/10 MIN OF EFFORT	24.4
SAMPLING TIME (MIN)	200						KG/10 MIN OF EFFORT	2.35

TABLE G-10 cont.

page 5 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 5

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCT COMP BY NO
			0-8	>8-16	>16-24	>24	
NORTHERN PIKE	3	1590	0	0	1	2	.5
CARP	9	33400	0	0	9	1-4	3-3
COMMON SHINER	15	14	15	0	0	2-3	0-0
SPOTTAIL SHINER	6	10	6	0	0	.9	0-0
SPOTTIN SHINER	74	66	74	0	0	11-2	.1
SAND SHINER	48	37	48	0	0	7-2	.1
MIMIC SHINER	4	1	4	0	0	.6	0-0
BLUNTNOSE MINNOW	169	327	169	0	0	25-5	.2
FATHEAD MINNOW	2	2	0	0	0	.3	0-0
WHITE SUCKER	2	980	0	0	2	.3	2-0
SPOTTED SUCKER	22	3013	2	16	0	4	3-3
GOLDEN REDHORSE	4	403	0	1	2	1	.6
SHORthead REDHORSE	1	300	0	0	0	.2	.6
YELLOW BULLHEAD	1	150	0	0	1	0	.3
BROOK SILVERSIDE	24	42	24	0	0	3-6	.1
ROCK BASS	1	14	1	0	0	.2	0-0
GREEN SUNFISH	69	1354	41	28	0	10-4	2-8
PUMPKINSEED	76	1367	45	31	0	11-5	2-8
BLUEGILL	79	737	61	18	0	11-9	1-5
LARGEMOUTH BASS	43	4460	28	6	4	5-5	6-5
BLACK CRAPPIE	3	51	2	1	0	0	.1
GREEN X PUMPKINSEED	2	7	2	0	0	.3	0-0
GREEN X BLUEGILL	4	34	3	1	0	.6	.1
BLUEGILL X PUMPKINSEED	2	30	1	0	0	.3	.1
TOTALS	663	46396	526	103	8	24	
TOTAL SPECIES	24						* FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	200						KG/10 MIN OF EFFORT

TABLE G-10 cont.

page 6 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 6

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCT NO	COMP BY WT
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	1	109	0	0	1	0	.2	.5
CARP	4	1,2490	0	0	0	4	1.0	60.9
SFOTFIN SHINER	14	16	1.4	0	0	0	3.5	.1
SAND SHINER	2	3	2	0	0	0	.5	0.0
MIMIC SHINER	1	1	1	0	0	0	.2	0.0
BLUNTNOSE MINNOW	104	168	10.4	0	0	0	26.0	.9
FATHEAD MINNOW	14	10	1.4	0	0	0	3.5	0.0
WHITE SUCKER	2	12	2	0	0	0	.5	.1
SPOTTED SUCKER	7	618	4	2	0	1	1.7	3.0
GOLDEN REDHORSE	7	2192	3	0	0	4	1.7	10.7
SOUTHEAST REDHORSE	1	0	1	0	0	0	.2	0.0
BROOK SILVERSTIDE	24	42	2.4	0	0	0	6.0	.2
ROCK BASS	8	609	1	5	2	0	2.0	3.9
GREEN SUNFISH	67	1222	43	24	0	0	16.7	6.0
PUMPKINSEED	45	1229	20	24	1	0	11.2	6.0
BLUEGILL	50	587	40	10	0	0	12.5	2.9
LARGEMOUTH BASS	35	792	22	12	0	1	6.7	3.9
GREEN X PUMPKINSEED	5	94	3	2	0	0	1.2	.5
GREEN X BLUEGILL	2	22	2	0	0	0	.5	.1
BLUEGILL X PUMPKINSEED	2	49	1	1	0	0	.5	.2
BLACKSIDE DARTER	5	5	5	0	0	0	1.2	0.0
TOTALS	400	20495	306	80	4	10		
TOTAL SPECIES	21						# FISH/10 MIN OF EFFORT	20.0
SAMPLING TIME (MIN)	200						KG/10 MIN OF EFFORT	1.02

TABLE G-10 cont.

page 7 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	WEIGHT (GM)	LENGTH (CM)				FACT BY	
			0-8	>8-16	>16-24	>24	NO	WT
NORTHERN PIKE	1	45	0	0	1	0	*3	*6
SPOTTAIL SHINER	5	3	5	0	0	0	1,6	0,0
SPOTTED SHINER	1	3	1	0	0	0	*3	0,0
BLUNTNOSE MINNOW	32	72	32	0	0	0	10,0	*9
FATHER MINNOW	1	2	1	0	0	0	*3	0,0
WHITE SUCKER	2	1135	0	0	0	2	*6	14,0
SPOTTED SUCKER	3	498	1	0	2	0	*9	6,2
ROOK SILVERSIDE	20	28	20	0	0	0	*2	.3
ROCK BASS	2	198	0	1	0	0	*6	2,4
GREEN SUNFISH	94	2370	46	48	0	0	29,3	29,3
PUMPKINSEED	77	1433	47	30	0	0	24,0	17,7
BLUEGILL	45	670	26	49	0	0	14,0	10,8
LARGEMOUTH BASS	30	1260	22	8	0	0	9,3	15,6
GREEN X PUMPKINSEED	5	147	4	4	0	0	1,6	1,6
BLUEGILL X PUMPKINSEED	1	21	0	4	0	0	*3	*3
JOHNNY DARTER	1	1	1	0	0	0	0,0	0,0
BLACKSIDE DARTER	1	1	0	0	0	0	*3	0,0
TOTALS		324	8086	204	111	4	2	
TOTAL SPECIES	17						16,1	
SAMPLING TIME (MIN)	200						*40	
							♦ FISH/10 MIN OF EFFORT	
							KG/10 MIN OF EFFORT	

TABLE G-10 cont.

page 8 of 9

METHOD: Electrofishing
 DATE: September - August (all dates combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY WT
			≤8	>8-16	>16-24	>24	
GOLDFISH	2	1020	0	0	1	1	1.7 .2 1.3
CARP	17	47168	0	0	2	15	1.7 .2 0.1
SFOTTAIL SHINER	2	3	2	0	0	0	.2 0.0
SFOTFIN SHINER	9	1.9	9	0	0	0	.9 0.0
SAND SHINER	1	9	1	0	0	0	.1 0.0
BLUNTNOSE MINNOW	112	269	112	0	0	0	11.3 .3
FATHEAD MINNOW	1	0	1	0	0	0	.1 0.0
WHITE SUCKER	2	174	0	1	0	0	.1 0.0
SPOTTED SUCKER	4	214	0	1	1	0	.2 .2
GOLDEN REDHORSE	2	1185	0	0	0	0	.4 .3
BROOK SILVERSIDE	54	77	54	0	0	0	.1 .5
ROCK BASS	2	84	0	2	0	0	.2 .1
GREEN SUNFISH	186	3194	122	64	0	0	.2 .1
PUMPKINSEED	209	9139	54	154	1	0	18.7 4.1
BLUEGILL	281	9101	89	192	0	0	21.0 11.6
LARGEMOUTH BASS	39	3144	16	15	3	28.3 11.6	
BLACK CRAPPIE	20	2198	1	16	3	3.9 4.0	
GREEN X PUMPKINSEED	14	708	5	9	0	2.0 2.8	
GREEN X BLUEGILL	4	32	0	1	0	1.4 .9	
BLUEGILL X PUMPKINSEED	36	771	6	28	0	3.1 0.0	
TOTALS	994	78513	476	496	11	24	
TOTAL SPECIES	20						# FISH/10 MIN OF EFFORT
SAMPLING TIME (MIN)	200						KG/10 MIN OF EFFORT

TABLE G-10 cont.

page 9 of 9

METHOD: Electrostrofishing
 DATE: September - August (all dates combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCF COMP BY NO WT	
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	1	20	0	1	0	0	.2	.1
GOLDFISH	3	1.515	0	0	3	.7	5.4	
CARP	3	40900	0	0	3	.7	39.0	
SPOTTAIL SHINER	3	1	3	0	0	.2	0.0	
SPOTFIN SHINER	1	2	1	0	0	.2	0.0	
BLUNTNOSE MINNOW	15	15	15	0	0	3.3	.1	
WHITE SUCKER	1	5.20	0	0	1	.2	1.9	
SPOTTED SUCKER	8	15.28	1	3	2	2	1.7	5.5
GOLDEN REDHORSE	2	7.45	0	0	2	.4	2.7	
BROWN BULLHEAD	1	280	0	0	1	0	.2	1.0
BUCK SILVERSIDE	9	13	9	0	0	2.0	0.0	
GREEN SUNFISH	75	1.630	47	28	2	0	16.4	5.8
PUMPKINSEED	165	6.528	35	1.28	2	0	36.0	23.4
BLUEGILL	148	37.50	47	101	0	0	32.3	13.4
LARGEMOUTH BASS	17	3.45	7	10	0	0	3.7	1.2
GREEN X PUMPKINSEED	3	4.1	3	0	0	0	.7	.1
GREEN X BLUEGILL	1	4.8	0	1	0	0	.2	.2
BLUEGILL X PUMPKINSEED	2	4.1	1	0	0	0	.4	.1
TOTALS	458	27923	169	273	5	11		
TOTAL SPECIES	18						# FISH/10 MIN OF EFFORT	22.9
SAMPLING TIME (MIN)	200						KG/10 MIN OF EFFORT	1.40

TABLE G-11 cont.

page 5 of 6

METHOD: Frame Net
 DATE: October 1, 2 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCY NO	CUM WT
			0-8	>8-16	>16-24		
YELLOW BULLHEAD	18	4025	0	3	12	3	34.6
BROWN BULLHEAD	2	382	0	0	2	0	3.8
GREEN SUNFISH	2	72	0	2	0	0	6.7
PUMPKINSEED	10	513	0	10	0	0	3.8
BLUEGILL	19	650	0	19	0	0	19.2
BLACK CRAPPIE	1	39	0	1	0	0	36.5
TOTALS	52	5631	0	35	14	3	11.4
TOTAL SPECIES	6						
SAMPLING TIME (DAYS)	2.0						
# FISH/NET DAY				WEIGHT/NET DAY (KG)			
					26.0		
					22.84		

TABLE G-11 cont.

page 6 of 6

METHOD: Frame Net
 DATE: October 1, 2 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT BY	
			0-8	>8-16	>16-24	>24	NO WT
YELLOW BULLHEAD	40	2655	0	3	5	2	33.3 65.6
BROWN BULLHEAD	4	678	0	1	3	0	13.3 16.7
GREEN SUNFISH	1	40	0	1	0	0	3.3 1.0
PUMPKINSEED	1	90	0	1	0	0	3.3 2.2
BLUEGILL	14	585	0	14	0	0	46.7 14.5
TOTALS	30	4048	0	20	8	2	
TOTAL SPECIES SAMPLING TIME (DAYS)	5	2.0					# FISH/NET DAY WEIGHT/NET DAY (KG) 15.0 2.02

TABLE G-12

Summary of frame netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during April, 1976

METHOD: Frame Net
DATE: April 20, 21 (combined)
ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				COMPR BY	PCT
			0-8	>8-16	>16-24	>24		
CARP	1	1,200	0	0	0	1	10.0	29.0
GOLDEN REDHORSE	1	800	0	0	0	1	10.0	19.3
SHORTHEAD REDHORSE	1	1,000	0	0	0	1	10.0	24.2
YELLOW BULLHEAD	3	800	0	0	2	1	30.0	19.3
BLACK CRAPPIE	4	340	0	3	1	0	40.0	8.2
TOTALS	10	4,140	0	3	3	4		
TOTAL SPECIES	5							
SAMPLING TIME (DAYS)	2.0							
							# FISH/NET DAY	5.0
							WEIGHT/NET DAY (KG)	2.07

TABLE G-12 cont.

page 2 of 6

METHOD: Frame Net
 DATE: April 20, 21 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO	PCT WT
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	2	480	0	0	0	2	6.5	17.9
GOLDFISH	1	320	0	0	1	0	3.2	11.9
YELLOW BILLHEAD	2	290	0	0	2	0	6.5	10.6
PUMPKINSEED	4	340	0	4	0	0	12.9	12.6
BLUEGILL	17	812	0	17	0	0	54.8	30.2
BLACK CRAPPIE	4	408	0	4	0	0	12.9	15.2
GREEN X PUMPKINSEED	1	38	0	1	0	0	3.2	1.4
TOTALS	34	2688	0	26	3	2		
TOTAL SPECIES	7			# FISH/NET DAY				15.5
SAMPLING TIME (DAYS)	2.0			WEIGHT/NET DAY (KG)				1.34

TABLE G-12 cont.

page 3 of 6

METHOD: Frame Net
 DATE: April 20, 21 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	TOTAL LENGTH (CM)			COMF NO	EFT WT
			0-8	>8-16	>16-24		
YELLOW BULLHEAD	1	60	0	1	0	0	16.7 19.1
BROWN BULLHEAD	1	115	0	0	1	0	16.7 36.6
ROCK BASS	2	72	0	2	0	0	33.3 22.9
GREEN SUNFISH	1	43	0	1	0	0	16.7 13.7
BLUEGILL	1	24	0	1	0	0	16.7 7.6
TOTALS	6	314	0	5	1	0	
TOTAL SPECIES SAMPLING TIME (DAYS)	5 2.0		# FISH/NET DAY WEIGHT/NET DAY (KG)				3.0 .16

TABLE G-12 cont.

page 4 of 6

METHOD: Frame Net
 DATE: April 20, 21 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCY BY	
			0-8	>8-16	>16-24	>24	NO	WT
YELLOW BULLHEAD	3	508	0	0	2	1	75.0	86.4
BROWN BULLHEAD	1	80	0	1	0	0	25.0	13.6
TOTALS	4	588	0	1	2	1		
TOTAL SPECIES	2						2.0	
SAMPLING TIME (DAYS)	2.0							.29
							WEIGHT/NET DAY	(KG)

TABLE G-12 cont.

page 5 of 6

METHOD: Frame Net
 DATE: April 20, 21 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMPRY WT
			>8-16	>16-24	>24	
BROWN RULIFHEAD	1	80	0	1	0	50.0
BLUEGILL	1	30	0	1	0	50.0
TOTALS	2	110	0	2	0	22.5
TOTAL SPECIES	2					
SAMPLING TIME (DAYS)	2.0					
			# FISH/NET DAY			1.0
			WEIGHT/NET DAY (KG)			.05

TABLE G-12 cont.

page 6 of 6

METHOD: Frame Net
 DATE: April 20, 21 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				FCT COMP BY	
			0-8	>8-16	>16-24	>24	NO	WT
YELLOW EULLHEAD	3	670	0	1	1	1	42.9	62.9
BROWN BULLHEAD	1	110	0	0	1	0	14.3	10.3
PUMPKINSEED	2	218	0	2	0	0	28.6	20.5
GREEN X PUMPKINSEED	1	66	0	1	0	0	14.3	6.4
TOTALS	7	1066	0	4	2	1		
TOTAL SPECIES	4						# FISH/NET DAY	3.5
SAMPLING TIME (DAYS)	2.0						WEIGHT/NET DAY (KG)	.53

TABLE G-13

Summary of frame netting in the Grand River at fishing zones 1, 3, 4, 7, 8, and 9 during May, 1976.

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP	PCT WT
			0-8	>8-1.6	>1.6-2.4		
YELLOW BULLHEAD	1	60	0	1	0	0	50.0 65.7
BLUEGILL	1	10	1	0	0	0	50.0 14.3
TOTALS	2	70	1	1	0	0	
TOTAL SPECIES	2					# FISH/NET DAY	1.0
SAMPLING TIME (DAYS)	2.0					WEIGHT/NET DAY (KG)	.04

TABLE G-13 cont.

page 2 of 6

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO	
			0-8	>8-16	>16-24	>24	WT	
WHITE SUCKER	1	160	0	0	1	0	7.4	8.4
YELLOW BULLHEAD	9	1423	0	2	6	1	64.3	74.4
PUMPKINSEED	2	220	0	2	0	0	14.3	11.5
BLUEGILL	2	110	0	2	0	0	14.3	5.6
TOTALS	14	1913	0	6	7	1		
TOTAL SPECIES			# FISH/NET DAY				7.0	
SAMPLING TIME (DAYS)			WEIGHT/NET DAY (KG)				.96	

TABLE G-13 cont.

page 3 of 6

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				COMPR BY NO	PERCENT WT
			0-8	>8-16	>16-24	>24		
YELLOW BULLHEAD	♀	2743	0	2	2	5	100.0	100.0
TOTALS	♀	2743	0	2	2	5		
TOTAL SPECIES SAMPLING TIME (DAYS)	1	2.0	# FISH/NET DAY				4.5	
			WEIGHT/NET DAY (KG)				1.37	

TABLE G-13 cont.

page 4 of 6

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				COMB NO	FISH WT
			0-8	>8-16	>16-24	>24		
YELLOW BULLHEAD	3	398	0	1	2	0	100,0	100,0
TOTALS	3	398	0	1	2	0		
TOTAL SPECIES	1						1,5	
SAMPLING TIME (DAYS)	2,0							.20

TABLE G-13 cont.

page 5 of 6

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (KG)	LENGTH (CM)				PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24	>24		
YELLOW TULHEMI	8	1.907	0	4	2	2	100.0	100.0
TOTALS	8	1.907	0	4	2	2		
TOTAL SPECIES	1						# FISH/NET DAY	A.0
SAMPLING TIME (DAYS)	2.0						WEIGHT/NET DAY (KG)	.95

TABLE G-13 cont.

page 6 of 6

METHOD: Frame Net
 DATE: May 19, 20 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL LENGTH (CM)				FCT NO	COMP BY WT
			0-8	>8-16	>16-24	>24		
SPOTTED SUCKER	1	460	0	0	0	1	8.3	19.4
YELLOW RULLHEAD	2	1415	0	3	3	1	58.3	56.5
BROWN RULLHEAD	4	450	0	0	1	0	8.3	18.0
BLUEGILL	3	178	0	3	0	0	25.0	7.1
TOTALS	12	2503	0	6	4	2		
TOTAL SPECIES	4		# FISH/NET DAY				6.0	
SAMPLING TIME (DAYS)	2.0		WEIGHT/NET DAY (KG)				1.25	

TABLE G-14

Summary of frame netting in the Grand River at fishing zones 1, 3, 4, 7, 8, and 9 during June, 1976.

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (KG)				PCT BY COMP WT	
		0-8	>8-16	>16-24	>24	NO	WT
CARP	2	2600	0	0	0	2	66.7
GOLDEN REDHORSE	1	238	0	0	1	0	33.3
TOTALS	3	2838	0	0	1	2	8.4
TOTAL SPECIES	2						1.5
SAMPLING TIME (DAYS)	2.0						1.42
# FISH/NET DAY				WEIGHT/NET DAY (KG)			

TABLE G-14 cont.

page 2 of 6

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	WEIGHT (GM)	LENGTH (CM)				PERCENT COMP BY NO WT	
			0-8	>8-16	>16-24	>24		
YELLOW BULLHEAD	2	410	0	0	2	0	66.7	91.1
BLUEGILL	4	40	0	1	0	0	33.3	8.9
TOTAL	3	450	0	1	2	0		
TOTAL SPECIES	2							1.5
SAMPLING TIME (DAYS)	2.0							*.23
				# FISH/NET DAY				
				WEIGHT/NET DAY (KG)				

TABLE G-14 cont.

page 3 of 6

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY	
			0-8	>8-16	>16-24	>24	NO	WT
BLUEGILL	2	94	0	2	0	0	100.0	100.0
TOTALS	2	94	0	2	0	0		
TOTAL SPECIES	1			# FISH/NET DAY			1.0	
SAMPLING TIME (DAYS)	2.0			WEIGHT/NET DAY (KG)			,05	

TABLE G-14 cont.

page 4 of 6

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL			LENGTH (CM)			FACT		
			0-8	>8-16	>16-24	>24	COMP BY NO	BY WT			
WHITE SUCKER	1	740	0	0	0	1	1	7.1	22.5		
SHORTHEAD REDHORSE	2	1280	0	0	1	1	14.3	39.0			
YELLOW BULLHEAD	5	915	0	1	3	1	35.7	27.8			
ROCK BASS	4	223	0	4	0	0	28.6	6.8			
BLUEGILL	1	48	0	1	0	0	7.1	1.5			
BLACK CRAFTIE	1	80	0	1	0	0	7.1	2.4			
TOTALS	14	3286	0	7	4	3					
TOTAL SPECIES	6						# FISH/NET DAY		7.0		
SAMPLING TIME (DAYS)	2.0						WEIGHT/NET DAY (KG)		1.64		

TABLE G-14 cont.

page 5 of 6

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24	>24		
YELLOW BULLHEAD	7	1,150	0	3	3	1	70.0	80.9
BROWN BULLHEAD	3	272	0	2	1	0	30.0	19.1
TOTALS	10	1,422	0	5	4	1		
TOTAL SPECIES	2							
SAMPLING TIME (DAYS)	2.0							
				# FISH/NET DAY			5.0	
				WEIGHT/NET DAY (KG)				.71

TABLE G-14 cont.

page 6 of 6

METHOD: Frame Net
 DATE: June 22, 23 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO
WHITE SUCKER	1	368	0	0	0	1	6.3
GOLDEN REDHORSE	2	824	0	0	0	2	12.5
YELLOW BULLHEAD	7	2480	0	1	2	4	43.8
BROWN BULLHEAD	2	250	0	0	2	0	12.5
PUMPKINSEED	1	130	0	1	0	0	6.3
BLUEGILL	3	136	0	3	0	0	18.6
TOTALS	16	4188	0	5	4	7	
TOTAL SPECIES	6		# FISH/NET DAY				3.0
SAMPLING TIME (DAYS)	2.0		WEIGHT/NET DAY (KG)				2.09

TABLE G-15

Summary of frame netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during October, 1975, April, May and June, 1976.

METHOD: Frame Net
DATE: October - June (all dates combined)
ZONE: 1

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY WT	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO
CARP	3	3800	0	0	0	3	13.0
GOLDEN REDHORSE	2	1038	0	0	1	1	6.7
SHORthead REDHORSE	1	1000	0	0	0	1	4.3
YELLOW BULLHEAD	5	1010	0	1	3	1	21.7
CHANNEL CATFISH	4	916	0	0	1	3	17.4
BLUEGILL	2	48	1	1	0	0	3.7
WHITE CRAPPIE	2	178	0	2	0	0	3.7
BLACK CRAPPIE	4	340	0	3	1	0	17.4
TOTALS	23	8330	1	7	6	9	
TOTAL SPECIES SAMPLING TIME (DAYS)	6	6.0	# FISH/NET DAY				
			WEIGHT/NET DAY (KG)				



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TABLE G-15 cont.

page 2 of 6

METHOD: Frame Net
 DATE: October - June (all dates combined)
 ZONE: 3

SPECIES LIST	TOTAL NO.	WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO/WT
			0-8	>8-16	>16-24	
NORTHERN PIKE	2	480	0	0	0	2
GOLDFISH	1	320	0	0	1	0
WHITE SUCKER	1	160	0	0	1	0
SHORTHEAD REDHORSE	1	480	0	0	0	1
YELLOW BULLHEAD	15	2321	0	3	11	1
PUMPKINSEED	14	966	0	11	0	0
BLUEGILL	24	1108	0	24	0	0
LARGEMOUTH BASS	1	100	0	0	1	0
BLACK CRAPPIE	4	408	0	4	0	0
GREEN X PUMPKINSEED	1	38	0	1	0	0
TOTALS	61	6361	0	43	14	4
TOTAL SPECIES SAMPLING TIME (DAYS)	10 3.0			† FISH/NET DAY WEIGHT/NET DAY (KG)		7.6 .80

TABLE G-15 cont.

page 3 of 6

METHOD: Frame Net
 DATE: October - June (all dates combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
YELLOW BULLHEAD	11	2973	0	3	3	5
BROWN BULLHEAD	1	115	0	1	0	32.4
ROCK BASS	2	72	0	0	0	2.9
GREEN SUNFISH	1	43	0	1	0	5.9
PUMPKINSEED	3	243	0	3	0	2.9
BLUEGILL	16	715	0	1.6	0	1.0
TOTALS	34	4161	0	25	4	5
TOTAL SPECIES SAMPLING TIME (DAYS)	6	8.0	# FISH/NET DAY MEIGHT/NET DAY (KG)			4.3 +5.2

TABLE G-15 cont.

page 4 of 6

METHOD: Frame Net
 DATE: October - June (all dates combined)
 ZONE: 7

SPECIES LIST	TOTAL		LENGTH (CM)			PCY	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	COMP BY NO WT
WHITE SUCKER	1	740	0	0	0	1	1.6 7.4
SHORTHEAD REDHORSE	2	1280	0	0	1	1	3.1 12.8
YELLOW BULLHEAD	31	6465	1	5	18	7	48.4 64.5
BROWN BULLHEAD	2	225	0	1	1	0	3.1 2.2
ROCK BASS	4	223	0	4	0	0	6.3 2.2
GREEN SUNFISH	1	48	0	1	0	0	1.6 .5
PUMPKINSEED	3	176	0	3	0	0	4.7 1.8
BLUEGILL	19	786	0	19	0	0	29.7 7.8
BLACK CRAPPIE	1	80	0	1	0	0	1.6 .6
TOTALS	64	10023	1	34	20	9	
TOTAL SPECIES		9					# FISH/NET DAY
SAMPLING TIME (DAYS)		8.0					WEIGHT/NET DAY (KG)

TABLE G-15 cont.

page 5 of 6

METHOD: Frame Net
 DATE: October - June (all dates combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT NO WT	COMP BY NO
			0-6	>6-16	>16-24		
YELLOW BULLHEAD	33	7082	0	10	17	6	45.8
BROWN BULLHEAD	6	734	0	3	3	0	8.3
GREEN SUNFISH	2	72	0	2	0	0	8.0
PUMPKINSEED	10	513	0	10	0	0	2.8
BLUEGILL	20	680	0	20	0	0	5.6
BLACK CRAPPIE	1	39	0	1	0	0	7.5
TOTALS	72	9120	0	46	20	6	4
TOTAL SPECIES SAMPLING TIME (DAYS)	6	8.0	# FISH/NET DAY WEIGHT/NET DAY (KG)			9.0	1.14

TABLE G-15 cont.

page 6 of 6

METHOD: Frame Net
 DATE: October - June (all dates combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	WEIGHT (GM)	TOTAL			LENGTH (CM)	PCT	COMP BY NO WT
			0-8	>8-16	>16-24			
WHITE SUCKER	1	368	0	0	0	1	1.5	3.1
SPOTTED SUCKER	1	460	0	0	0	1	1.5	3.9
GOLDEN REDHORSE	2	624	0	0	0	2	3.1	7.0
YELLOW BULLHEAD	27	7220	0	9	11	6	41.5	61.2
BROWN BULLHEAD	6	1488	0	1	7	0	12.3	12.6
GREEN SUNFISH	1	40	0	1	0	0	1.5	3
PUMPKINSEED	4	438	0	4	0	0	6.2	3.7
BLUEGILL	20	899	0	20	0	0	30.8	7.6
GREEN X PUMPKINSEED	1	63	0	1	0	0	1.5	.6
TOTALS	65	11805	0	35	13	12		
TOTAL SPECIES							# FISH/NET DAY	3.1
SAMPLING TIME (DAYS)							WEIGHT/NET DAY (KG)	1.43

TABLE G-16

Summary of gill netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during September, 1975.

METHOD: Gill Net
 DATE: September 17, 18 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			COMP BY NO	PCT
			0-8	>8-16	>16-24		
NO FISH COLLECTED							
TOTALS	0	0	0	0	0	0	0
TOTAL SPECIES	0					# FISH/NET DAY	
SAMPLING TIME (DAYS)	2.0					WEIGHT/NET DAY (KG)	0.00

TABLE G-16 cont.

page 2 of 6

METHOD: Gill Net
 DATE: September 17, 18 (combined)
 ZONE: 3

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY	
	TOTAL NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO WT
CARP	3	7500	0	0	0	3	100,0 100,0
TOTALS	3	7500	0	0	0	3	
TOTAL SPECIES SAMPLING TIME (DAYS)	1 2,0			# FISH/NET DAY WEIGHT/NET DAY (KG)			1,5 3,75

TABLE G-16 cont.

page 3 of 6

METHOD: Gill Net
 DATE: September 17, 18 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMB BY WT
			0-8	>8-16	>16-24	
LARGEMOUTH BASS	1	148	0	0	1	0
TOTALS	1	148	0	0	1	0
TOTAL SPECIES SAMPLING TIME (DAYS)	1	2.0	# FISH/NET DAY WEIGHT/NET DAY (KG)			* .5 * .07

TABLE G-16 cont.

METHOD: Gill Net
DATE: September 17, 18 (combined)
ZONE: 7

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (KG)	PCT COMP BY WT			NO	
			0-6	>6-16	>16-24	>24	
NORTHERN PINE	1	1.94	0	0	0	1	100.0
TOTALS	1	1.94	0	0	0	1	100.0
TOTAL SPECIES SAMPLING TIME (DAYS)	1	2.0	# FISH/NET DAY			10	
			WEIGHT/NET DAY (KG)			5	

TABLE G-16 cont.

page 5 of 6

METHOD: Gill Net
 DATE: September 17, 18 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
NO FISH COLLECTED						
TOTALS	0	0	0	0	0	0
TOTAL SPECIES	0					# FISH/NET DAY
SPECIES TIME (DAYS)	1.0					WEIGHT/NET DAY (KG)
						0.00
						0.00

TABLE G-16 cont.

page 6 of 6

METHOD: Gill Net
 DATE: September 17, 18 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO. WT
			0-6	>6-16	>16-24	
NO FISH COLLECTED						
TOTALS	0	0	0	0	0	0
TOTAL SPECIES SAMPLING TIME (DAYS)	0	0	# FISH/NET DAY	0	0	0
	2.0	2.0	WEIGHT/NET DAY (KG)	0.00	0.00	0.00

TABLE G-17

Summary of gill netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during April, 1976.

METHOD: Gill Net
 DATE: April 20, 21 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
NORTHERN PIKE	1	600	0	0	0	1
CARP	2	2400	0	0	0	2
TOTALS	3	3000	0	0	0	3
TOTAL SPECIES SAMPLING TIME (DAYS)	2	240	# FISH/NET DAY WEIGHT/NET DAY (KG)			
			1.5	1.5	1.5	1.5

TABLE G-17 cont.

METHOD: Gill Net
 DATE: April 20, 21 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO	PCT COMP BY WT
			0-8	>8-16	>16-24		
CHANNEL CATFISH	1	3600	0	0	0	1	100.0
TOTALS	1	3600	0	0	0	1	100.0
TOTAL SPECIES SAMPLING TIME (DAYS)	1	2.0	* FISH/NET DAY			5	
			WEIGHT/NET DAY (KG)			1.70	

TABLE G-17 cont.

page 3 of 6

METHOD: Gill Net
 DATE: April 20, 21 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	8-16	>16-24	
NO FISH COLLECTED						
TOTALS	0	0	0	0	0	0
TOTAL SPECIES	0			# FISH/NET DAY		0.0
SAMPLING TIME (DAYS)	2.0			WEIGHT/NET DAY (KG)		0.00

TABLE G-17 cont.

METHOD: Gill Net
DATE: April 20, 21 (combined)
ZONE: 7

TABLE G-17 cont.

page 5 of 6

METHOD: Gill Net
 DATE: April 20, 21 (combined)
 ZONE: 8

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY	
	TOTAL NO	WEIGHT (GM)	0-8	8-16	>16-24	>24	NO WT
NORTHERN PIKE	1	3000	0	0	0	1	33.3 42.3
CARP	2	4100	0	0	0	2	66.7 57.7
TOTALS	3	7100	0	0	0	3	
TOTAL SPECIES	2						
SAMPLING TIME (DAYS)	2,0						
# FISH/NET DAY							1,5
WEIGHT/NET DAY (KG)							3,55

TABLE G-17 cont.

page 6 of 6

METHOD: Gill Net
 DATE: April 20, 21 (combined)
 ZONE: 9

SPECIES LIST	TOTAL		LENGTH (CM)			PCT COMP BY NO. WT
	TOTAL NO.	WEIGHT (GM)	0-8	>8-16	>16-24	
NORTHERN PIKE	1	190	0	0	0	25.0 3.7
CARP	2	4900	0	0	2	50.0 95.0
BROWN BULLHEAD	1	70	0	1	0	25.0 1.4
TOTALS	4	5160	0	1	0	2.0
TOTAL SPECIES	3					
SAMPLING TIME (MINS)	2,0					
		# FISH/NET DAY			2.0	
		WEIGHT/NET DAY (KG)			2.58	

TABLE G-18

Summary of gill netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during May, 1976.

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY NO WT
			0-8	>8-16	>16-24	
LARGEMOUTH BASS	1	800	0	0	0	100.0
TOTALS	1	800	0	0	0	100.0
TOTAL SPECIES SAMPLING TIME (DAYS)	1	2.0	# FISH/NET DAY			5
			WEIGHT/NET DAY (KG)			* 40

TABLE G-18 cont.

page 2 of 6

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 3

SPECIES LIST	TOTAL		LENGTH (CM)			FACT COMP BY	
	NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	NO WT
NORTHERN PIKE	2	11000	0	0	0	2	33.3 45.7
CARP	2	12000	0	0	0	2	33.3 49.6
SPOTTED SUCKER	1	1000	0	0	0	1	16.7 4.2
BLUEGILL	1	78	0	1	0	0	16.7 .3
TOTALS	6	24078	0	1	0	5	
TOTAL SPECIES SAMPLING TIME (DAYS)	4	2.0					# FISH/NET DAY WEIGHT/NET DAY (KG)
							3.0 12.04

TABLE G-18 cont.

page 3 of 6

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PCT COMP BY WT
			0-8	>8-16	>16-24	
NO FISH COLLECTED						
TOTALS	0	0	0	0	0	0
TOTAL SPECIES SAMPLED TIME (MAYS)	0	2,0				# FISH/NET DAY WEIGHT/NET DAY (NG)
						0,0 0,00

TABLE G-18 cont.

page 4 of 6

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 7

SPECIES LIST	TOTAL		LENGTH (CM)			PCT	
	NO	WEIGHT (GM)	0-8	>8-16	>16-24	>24	COMP BY
NO FISH COLLECTED							
TOTAL SPECIES	0	0	0	0	0	0	0.0
SAMPLING TIME (DAYS)	2.0						0.00
# FISH/NET DAY							
WEIGHT/NET DAY (KG)							

TABLE G-18 cont.

page 5 of 6

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO	COMP BY WT
			0-8	>8-16	>16-24		
NO FISH COLLECTED							
TOTALS	0	0	0	0	0	0	
TOTAL SPECIES	0					# FISH/NET DAY	0.0
SAMPLING TIME (DAYS)	2.0					WEIGHT/NET DAY (KG)	0.00

TABLE G-18 cont..

page 6 of 6

METHOD: Gill Net
 DATE: May 19, 20 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT NO WT	COMP BY NO WT
			0-8	>8-16	>16-24		
WHITE SUCKER	1	800	0	0	0	1	100.0 100.0
TOTALS	1	800	0	0	0	1	
TOTAL SPECIES SAMPLING TIME (DAYS)	1 2.0		# FISH/NET DAY WEIGHT/NET DAY (KG)				*5 *40

TABLE G-19

Summary of gill netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during June, 1976.

METHOD: Gill Net
 DATE: June 22, 23 (combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			FCT COMP BY	
			0-8	>8-16	>16-24	>24	NO WT
NORTHERN PIKE	1	2200	0	0	0	1	33.3 44.0
CARP	1	2000	0	0	0	1	33.3 40.0
GOLDEN REDHORSE	1	800	0	0	0	1	33.3 16.0
TOTALS	3	5000	0	0	0	3	
TOTAL SPECIES	3						
SAMPLING TIME (DAYS)	2.0						
# FISH/NET DAY							1.5
WEIGHT/NET DAY (KG)							2.50

TABLE G-19 cont.

page 2 of 6

METHOD: G111 Net
 DATE: June 22, 23 (combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	FCT				COMB WT
			0-8	>8-16	>16-24	>24	
NORTHERN PIKE	2	690	0	0	0	2	20.0
CAKE	7	26300	0	0	0	7	70.0
BLUEGILL	1	60	0	1	0	0	10.0
TOTALS	10	27250	0	1	0	9	
TOTAL SPECIES	3		# FISH/NET DAY				5.0
SAMPLING TIME (DAYS)	2.0		WEIGHT/NET DAY (KG)				13.63

TABLE G-19 cont.

page 3 of 6

METHOD: Gill Net
 DATE: June 22, 23 (combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				COMPR BY NO WT
			0-8	>8-16	>16-24	>24	
NORTHERN PIKE	2	770	0	0	0	2	28.6 3.9
GOLDFISH	1	800	0	0	0	1	14.3 4.1
CARP	4	18000	0	0	0	4	57.1 92.0
TOTALS	7	19570	0	0	0	7	
TOTAL SPECIES	3		# FISH/NET DAY				3.5
SAMPLING TIME (DAYS)	2.0		WEIGHT/NET DAY (KG)				9.78

TABLE G-19 cont.

page 4 of 6

METHOD: Gill Net
 DATE: June 22, 23 (combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PER CENT BY NO WT
			0-8	>8-16	>16-24	
NO FISH COLLECTED						
TOTALS	0	0	0	0	0	0
TOTAL SPECIES SAMPLING TIME (DAYS)	0	0	# FISH/NET DAY WEIGHT/NET DAY (KG)			0.0 0.00
	2.0					

TABLE G-19 cont.

page 5 of 6

METHOD: Gill Net
 DATE: June 22, 23 (combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (KG)	LENGTH (CM)				PCT COMP BY NO WT	
			0-8	>8-16	>16-24	>24		
CARP	1	2000	0	0	0	1	50.0	96.2
BROWN BULLHEAD	1	80	0	1	0	0	50.0	3.8
TOTALS	2	2080	0	1	0	1		
TOTAL SPECIES	2						# FISH/NET DAY	1.0
SAMPLING TIME (DAYS)	2.0						WEIGHT/NET DAY (KG)	1.04

TABLE G-19 cont.

METHOD: G411 Net
 DATE: June 22, 23 (combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY WT	
			0-8	>8-16	>16-24	>24	NO	WT
CARP	4	20000	0	0	0	4	21.1	94.6
GOLDEN REPHORSE	1	430	0	0	0	1	5.3	2.0
BROWN BULLHEAD	1	140	0	0	1	0	5.3	.7
PUMPKINSEED	3	134	0	3	0	0	15.8	.6
BLUEGILL	9	396	0	9	0	0	47.4	1.9
BLUEGILL X PUMPKINSEED	1	42	0	1	0	0	5.3	.2
TOTALS	19	21142	0	13	1	5		
TOTAL SPECIES	6						9.5	
SAMPLING TIME (DAYS)	2.0						10.57	
* FISH/NET DAY WEIGHT/NET DAY (KG)								

TABLE G-20

Summary of gill netting in the Grand River at fishing zones 1, 3, 4, 7, 8 and 9 during September, 1975, April, May, and June, 1976.

METHOD: Gill Net
 DATE: September - June (all dates combined)
 ZONE: 1

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			COMB NO	FCT BY WT
			0-8	>8-16	>16-24		
NORTHERN PIKE	2	2800	0	0	0	2	28.6 31.8
CARP	3	4400	0	0	0	3	42.9 50.0
GOLDEN REDHORSE	1	800	0	0	0	1	14.3 9.1
LARGEMOUTH BASS	1	800	0	0	0	1	14.3 9.1
TOTALS	7	8800	0	0	0	7	
TOTAL SPECIES	4						# FTSM/NET DAY
SAMPLING TIME (DAYS)	3.0						WEIGHT/NET DAY (KG)
							1.10

TABLE G-20 cont.

METHOD: Gill Net
 DATE: September - June (all dates combined)
 ZONE: 3

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)			PERCENT BY WT	
			0-6	>6-16	>16-24	>24	NO
NORTHERN PIKE	4	11890	0	0	0	4	20.0 19.0
CARP	12	45800	0	0	0	12	60.0 73.1
SPOTTED SUCKER	1	1000	0	0	0	1	5.0 1.6
CHANNEL CATFISH	1	3800	0	0	0	1	5.0 6.1
BLUGETTL	2	133	0	2	0	0	1.0.0 .2
TOTALS	20	62628	0	2	0	18	
TOTAL SPECIES	5						2.5
SAMPLING TIME (DAYS)	8.0						.83
# FISH/NET DAY							
WEIGHT/NET DAY (KG)							

TABLE G-20 cont.

page 3 of 6

METHOD: Gill Net
 DATE: September - June (all dates combined)
 ZONE: 4

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				COMB WT	FCT
			0-6	>6-16	>16-24	>24		
NORTHERN PIKE								
GOLDFISH	2	770	0	0	0	2	25.0	3.9
CARP	1	800	0	0	0	1	12.5	4.1
LARGEMOUTH BASS	4	18000	0	0	0	4	50.0	91.3
	1	148	0	0	1	0	12.5	.8
TOTALS	8	19718	0	0	1	7		
TOTAL SPECIES	4							
SAMPLING TIME (DAYS)	8.0							
			# FISH/NET DAY				1.0	
			WEIGHT/NET DAY (KG)				2.46	

TABLE G-20 cont.

page 4 of 6

METHOD: G111 Net
 DATE: September - June (all dates combined)
 ZONE: 7

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (G)	LENGTH (CM)			PCT COMP BY WT	
			0-8	8-16	>16-24	>24	NO
NORTHERN PIKE	1	1.94	0	0	0	1	100.0 100.0
TOTALS	1	1.94	0	0	0	1	
TOTAL SPECIES	1						# FISH/NET DAY
SAMPLING TIME (DAYS)	8.0						.1 .02

TABLE G-20 cont.

page 5 of 6

METHOD: Gill Net
 DATE: September - June (all dates combined)
 ZONE: 8

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT BY NO	
			0-8	>8-1.6	>1.6-2.4	>2.4	WT	
NORTHERN PIKE	1	3000	0	0	0	1	20.0	32.7
CARP	3	6100	0	0	0	3	60.0	66.4
BROWN BULLHEAD	1	90	0	1	0	0	20.0	.9
TOTALS	5	9180	0	1	0	4		
TOTAL SPECIES	3						# FISH/NET DAY	
SAMPLING TIME (DAYS)	7.0						WEIGHT/NET DAY (KG)	1.31

TABLE G-20 cont.

page 6 of 6

METHOD: Gill Net
 DATE: September - June (all dates combined)
 ZONE: 9

SPECIES LIST	TOTAL NO	TOTAL WEIGHT (GM)	LENGTH (CM)				PCT COMP BY NO WT	
			0-8	>8-16	>16-24	>24		
NORTHERN PIKE	1	190	0	0	0	1	4.2	.7
CARP	6	24900	0	0	0	6	25.0	91.9
WHITE SUCKER	1	800	0	0	0	1	4.2	3.0
GOLDEN REDHORSE	1	430	0	0	0	1	4.2	1.6
BROWN BULLHEAD	2	210	0	1	1	0	8.3	.8
PUMPKINSEED	3	134	0	3	0	0	12.5	.5
BLUETAIL X PUMPKINSEED	9	395	0	9	0	0	37.5	1.5
BLUETAIL	1	42	0	1	0	0	4.2	.2
TOTALS	24	27102	0	14	1	9		
TOTAL SPECIES	8						5.0	
SAMPLING TIME (DAYS)	3.0						3.39	

FISH/MET DAY
 WEIGHT/NET DAY (KG)

APPENDIX H

TABLE NO.

PAGE	H-1 Fish Stomach Contents, May, 1976 1H	H-2 Fish Stomach Contents, June, 1976 4H	H-3 Fish Stomach Contents, August, 1976 9H
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TABLE H-1

Summary of stomach contents from fish collected in May from ambient or heated water areas. Individual fish lengths (standard in mm) and weights (grams) are presented along with the sex (M or F). The taxa, and numbers of each, found in each stomach are presented.

SPECIES: largemouth bass
AREA: ambient

TAXA	90-17 M	240-338 M	245-404 F	215-275 M	225-305 M	115-35 M	TOTAL NO	MEAN WEIGHT	STD ERROR	FCT COMF
O-DEGARIA (CRAYFISH) F-ASTACIDE	0	0	1	0	0	0	1	.2	.2	20,.6
O-HYDROPTERA (CHILOES) CHIRONOMIDAE PUPAE	0	0	0	0	1	0	1	.2	.2	20,.9
O-HEMIPTERA (WATER BUGS) F-CORYDALIDAE	1	0	0	0	0	0	1	.2	.2	20,.0
O-CYPRINIFORMES F-CYPRINIDAE (MINNOWS)	1	1	0	0	0	0	2	.3	.2	40,.6
TOTAL NO OF ORGANISMS	2	1	1	0	1	0	5	.8	.3	
TOTAL NO OF TAXA	2	1	1	0	1	0	4			

SPECIES: largemouth bass
AREA: heated water

TAXA	142-86 F	78-11 M	101-23 M	180-156 F	85-12 F	88-14 M	78-10 F	87-13 M	95-24 F	TOTAL NO	MEAN WEIGHT	STD ERROR	FCT COMF
O-DEGARIA (CRAYFISH) F-ASTACIDE	0	0	0	1	0	0	0	0	0	1	.1	.1	12,.5
O-CYPRINIFORMES F-CYPRINIDAE (MINNOWS)	1	2	1	0	0	0	0	1	2	7	.8	.3	87,.5
TOTAL NO OF ORGANISMS	1	2	1	1	0	0	0	1	2	8	.9	.3	
TOTAL NO OF TAXA	1	1	1	0	0	0	1	1	2				

TABLE H-1 cont.

page 2 of 3

SPECIES: green sunfish

AREA: ambient

2E

TAXA	62-9 F	82-17 F	62-8 F	52-5 M	80-18 F	TOTAL NO	MEAN	SIR ERROR	FACT COMP
O-HYDRACARINA (WATER MITES)	1	0	1	0	0	2	.4	.2	20.0
O-BECAUDIA (CRAYFISH)	0	1	0	0	0	1	.2	.2	10.0
O-ISOPHONG (AQUATIC SOIL BUGS)	0	0	0	0	1	1	.2	.2	10.0
O-COLOPHON (COLLEMBOLA)	0	1	0	1	0	2	.4	.2	20.0
O-HYDROG. CHILOPSIS	0	1	0	0	0	1	.2	.2	10.0
O-CHIRONOMIDE LARVAE	0	0	0	1	1	2	.4	.2	20.0
O-OONATA (AMSELELIERS)	1	0	0	0	0	1	.2	.2	10.0
F-COENAGRICOIDAE									
TOTAL NO OF ORGANISMS	2	3	1	2	2	10	2.0	.3	
TOTAL NO OF TAXA	2	3	1	2	2	7			

TABLE H-1 cont.

page 3 of 3

SPECIES: green sunfish
 AREA: heated water

TAXA	100-53 M	68-17 F	96-52 M	62-13 F	80-23 M	69-17 M	122-103 M	79-27 M	103-53 F	63-13 F	TOTAL NO	MEAN	STD ERRONE	HGT CM
O-HYDROCARBONS (WATER MITES)	0	0	0	0	0	0	0	4	0	0	1	.1	.1	6.4
O-DECAPODS (CRAYFISH) F-ASTACIDAE	0	0	1	0	0	0	1	2	0	1	5	.5	.2	33.3
O-ISOPORIDA (AQUATIC SOIL BUGS) LICEIDES SF F-SPIATROMIDE	0	0	0	0	0	0	0	1	0	0	1	.1	.1	6.7
O-DIPTERA (MIDGE) CHIRONOMIDAE LARVAE CHIRONOMIDAE PUPAE	0	0	0	0	0	0	0	3	0	0	3	.3	.3	20.0
O-INSECTS (WATER FLEAS)	0	0	0	0	0	0	0	1	0	0	1	.1	.1	6.7
TOTAL NO OF ORGANISMS	0	0	1	0	0	0	2	11	0	1	15	1.5	1.3	
TOTAL NO OF TAXA	0	0	1	0	0	0	2	7	0	1	8			

TABLE H-2

Summary of stomach contents from fish collected in June from ambient or heated water areas. Individual fish lengths (standard in mm) and weights (grams) are presented along with the sex (M, F, or Undetermined). The taxa, and numbers of each, found in each stomach are presented.

SPECIES: largemouth bass
AREA: ambient

	TAXA	220-304	228-365	120-50	87-17		TOTAL NO	MEAN STD	FCT	
		M	M	M	U		NO	ERROR	CMP	
O-DECAPODA (CRAYFISH) F-ASTACIDAE	0	1	0	1			2	.5	.3	33.3
O-EPEHEMEROPTERA (MAYFLIES) F-BAETIDAE	0	0	0	1			1	.3	.3	16.7
O-CYPRINIFORMES F-CYPRINIDAE (MINNOWS)	0	2	1	0			3	.8	.5	50.0
TOTAL NO OF ORGANISMS	0	3	1	2			6	1.5	.6	
TOTAL NO OF TAXA	0	2	1	2			3			

SPECIES: largemouth bass
AREA: heated water

	TAXA	242-375	205-264	152-110	129-65	105-37	86-19	88-20	95-29	88-19	75-13	77-13	TOTAL NO	MEAN	STD	FCT
		M	F	M	M	F	U	M	F	F	U	M	NO	ERROR	CMP	
O-DECAPODA (CRAYFISH) F-ASTACIDAE	1	1	2	0	4	0	0	0	1	0	0	9	.8	.4	15.5	
O-DIPTERA (MIDGE)	0	0	0	0	0	0	0	0	3	2	0	5	.5	.3	8.6	
CHILOPODA LARVAE	0	0	0	0	0	0	0	0	0	0	0	0	0			
O-EPEHEMEROPTERA (MAYFLIES) F-BAETIDAE	0	0	0	0	0	0	0	0	3	2	0	5	.5	.3	39.7	
F-EPEHEMEROPTERA	0	0	3	0	0	0	0	0	0	0	0	0	0			5.2
O-HEMIPTERA (WATER BUGS) F-CORIXIDAE	0	0	0	0	0	0	0	2	1	0	3	1	.7	.6	.3	12.1
O-CYPRINIFORMES F-CYPRINIDAE (MINNOWS)	0	0	0	0	5	1	1	2	0	2	0	0	14	1.0	.5	19.0
TOTAL NO OF ORGANISMS	1	1	5	0	9	4	10	5	9	12	2	2	58	.5	.3	1.3
TOTAL NO OF TAXA	1	1	2	0	2	2	3	3	3	4	2	2	6			

TABLE H-2 cont.

page 2 of 5

SPECIES: green sunfish
AREA: ambient

TABLE H-2 cont.

page 3 of 5

SPECIES: green sunfish
 AREA: heated water

TAXON	140-125 H	113-65 F	80-31 F	71-19 F	77-25 H	70-18 F	60-10 H	47-3 H	TOTAL NO.	MEAN	STD ERROR	F.C.I. C.I.D.H.
O. HYPERBORA (WATER MILLS)	0	0	0	0	0	1	0	0	1	.1	.4	.5
O. COEFFELIA	0	0	0	0	0	0	1	0	1	.1	.4	.5
O. CLAVICERA (WATER FLEAS)	0	0	0	0	0	0	0	0	100	22.5	22.5	85.3
O. OECETIS (CLEAR WASH) + GASTROTHORAX	0	0	3	1	1	0	1	1	7	.9	.4	3.3
O. CORYDALLUS (MUDFLIES)	0	0	0	0	0	0	3	0	5	.6	.4	2.4
O. PLECO (EXCEPT HINGES)	0	1	0	0	0	0	0	0	1	.1	.1	.5
O. MATERA PUPAE	0	0	0	0	1	1	0	0	2	.3	.2	.9
O. DIPTERA (MIDGE'S) CHIRONOMIDAE LARVAE	0	0	0	0	4	0	0	3	7	.9	.6	3.3
O. HEMIPTERA (WATER BUGS)	0	0	0	0	0	2	0	0	2	.3	.3	.9
O. EDRYFX (OOLIE)	0	0	1	0	0	0	0	0	1	.1	.1	.5
O. OONOPHILA (WATER BUGS)	0	0	1	0	0	0	0	0	1	.1	.1	.5
O. IRIDA (WATER BUGS)	0	0	0	0	0	1	0	0	1	.1	.1	.5
O. TROPHICUS	0	0	0	0	0	2	0	0	2	.3	.3	.9
TOTAL NO OF TAXA	0	1	5	1	6	9	4	106	211	26.4	22.46	
SHANNON WEIGER INDEX									1.3			

TABLE H-2 cont.

page 4 of 5

SPECIES: pumpkinseed
AREA: ambient

TABLE H-2 cont.

TABLE H-3

Summary of stomach contents from fish collected in August from ambient or heated water areas. Individual fish lengths (standard in mm) and weights (grams) are presented along with the sex (M, F, or Undetermined). The taxa, and numbers of each, found in each stomach are presented.

SPECIES: largemouth bass
AREA: ambient

	16X6	80-8 F	80-13 M	92-22 M	82-18 F	73-12 M	84-14 F	70-8 M	78-11 F	76-12 F	90-18 M	70-10 M	72-8 M	TOTAL NO	MEAN WEIGHT	STD ERROR	F.G.I. COMP
O-DIPTERA (BEETLES)	0	0	0	0	0	0	0	0	1	0	0	0	0	1	,1	,1	2,5
O-DIPTERA (MIDGE)	1	0	20	0	0	0	0	0	0	0	0	0	0	21	1,8	1,7	52,5
CHIRONOMIDAE LARVAE	1	0	4	0	1	0	2	0	1	0	0	0	0	6	,5	,2	15,0
CHIRONOMIDAE PUPAE																	
O-EPEMEROPTERA (MAYFLIES)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	,1	,1	2,5
F-TAETIDAE																	
O-DEPIPTERO (WATER BUGS)	1	0	0	0	0	0	0	0	0	0	0	0	0	1	,1	,1	2,5
F-CORYDALIDAE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	,1	,1	2,5
O-EXOPTERINIFORMES																	
F-EXOPTERINIFORMES (HINMOUS)	0	0	1	2	1	0	2	0	1	0	1	1	1	9	,8	,2	22,5
TOTAL NO OF ORGANISMS	3	0	22	2	2	0	4	0	3	1	2	1	1	40	3,3	1,7	
TOTAL NO OF TAXA	3	0	3	1	2	0	2	0	3	1	2	1	1				
SHANNON-WEAVER INDEX																	

TABLE H-3 cont.

page 2 of 6

SPECIES: largemouth bass
 AREA: heated water

TAXA	72-10 M	87-10 F	78-10 F	75-8 F	72-8 M	78-6 F	57-4 M	60-4 F	TOTAL NO	MEAN	STD ERROR	FCT COMP
C-CRUSTACEA												
CRUSTACEA LARVAE	0	0	0	0	0	24	0	6	30	3.8	3.0	6.9
CRUSTACEA IMMATURE	0	0	0	3	0	0	0	0	3	.4	.4	.7
O-GDFEPOMA	0	0	0	0	0	0	0	0	385	43.1	48.1	89.1
O-DECAFODA (CRAYFISH)												
F-ASTACIDAE	0	1	0	0	0	0	0	0	1	.1	.1	.2
O-DIFFERA (MIGES)												
CHIRONOMIDAE LARVAE	0	0	0	1	1	1	0	0	3	.4	.2	.7
CHIRONOMIDAE FUFAE	1	0	0	1	1	3	0	0	6	.8	.4	1.4
O-EPEHEMEROPTERO (MAYFLIES)	0	1	0	0	0	0	0	0	1	.1	.1	.2
F-TAEI IDE												
O CYPRINIFORMES												
F-CYPRINIDAE (MINNOWS)	0	0	0	2	1	0	0	0	3	.4	.3	.7
TOTAL NO OF ORGANISMS	1	2	0	7	3	28	0	391	432	54.0	48.3	
TOTAL NO OF TAXA	1	2	0	4	3	3	0	2	9			
SHANNON-WEAVER INDEX												

TABLE H-3 cont.

page 3 of 6

SPECIES: green sunfish
 AREA: ambient

TAXA	95-32 M	60-6 F	57-5 M	56-6 M	45-4 M	TOTAL NO	MEAN	STD ERROR	PCT COMP
O-HYDRACARINA (WATER MITES)	0	0	0	7	0	7	1.4	1.4	1.2
O-CORIOPHA	0	0	0	6	0	6	1.2	1.2	1.0
O-CLADOCERA (WATER FLEAS)	0	497	0	56	0	553	110.6	97.2	95.2
O-DIPTERA (MIGSES) CHITONOMIDAE LARVAE	2	0	0	4	0	6	1.2	.8	1.0
O-HEMIPTERA (WATER BUGS)	1	3	0	0	0	4	.8	.6	.7
O-ONONATA (CHOLELISES) F-GENEGRITIONIDAE	0	0	0	0	1	2	.4	.2	.3
O-GASTROPODA (SNAILS) F-PHYTIDIAE	1	0	0	0	0	1	.2	.2	.2
O-HYMENOPTERA	1	0	0	0	0	1	.2	.2	.2
TOTAL NO OF ORGANISMS	6	501	0	73	1	501	116.2	97.2	
TOTAL NO OF TAXA	5	3	0	4	1	9			
SHANNON-MEANER INDEX									

TABLE H-3 cont.

page 4 of 6

SPECIES: green sunfish
AREA: heated water

TAXA	130-90 F	110-54 M	128-82 M	110-42 M	90-30 M	85-15 M	82-20 M	87-17 M	75-12 M	75-15 M	70-8 M	TOTAL NO	MEAN	STD ERROR	FCT COMP
O-HYDRACTINA (WATER MITES)	0	1	0	0	0	0	0	0	0	0	0	1	.1	.1	.3
O-CRUSTACEA (CRUSTACEA IMMATURE)	0	0	0	0	0	0	0	0	0	0	0	5	.5	.5	1.7
O-COPEPODA	0	0	0	0	0	0	0	0	0	0	0	220	220	20.0	22.6
O-HELIOPHILA (CHOREID SHRIMP)	1	0	1	0	0	0	0	0	1	1	0	4	.4	.2	1.3
O-COLEOPTERA (BEETLES)	0	0	0	0	0	0	0	1	0	0	1	2	.2	.1	.7
O-DIPTERA (EXCEPT MIDGE)	0	0	0	0	0	0	0	0	1	0	0	1	.1	.1	.3
O-EPHEMEROPTERA (MAYFLIES)	0	0	0	0	0	2	5	0	0	12	4	23	2.1	1.1	7.6
O-HEMIPTERA (WATER BUGS)	0	0	0	0	0	0	0	0	0	11	0	13	1.2	1.0	4.3
O-ORONATA (CHORELFILIES)	0	0	0	1	0	1	4	0	1	3	0	6	.5	.3	2.6
O-GASTROPODA (SNAILS)	0	0	0	0	0	0	0	0	0	0	0	3	.3	.1	1.0
O-PHYSIIDA	0	0	0	0	1	0	0	0	0	0	0	10	.9	.7	3.3
O-ORTHOPTERA	0	0	0	0	0	0	0	0	0	0	0	13	1.3	1.2	4.3
TOTAL NO OF ORGANISMS	2	2	2	8	1	3	21	4	2	29	229	303	27.5	20.3	
TOTAL NO OF TAXA	2	2	2	2	1	2	5	2	2	6	3	14			
SHANNON-WEAVER INDEX															

TABLE H-3 cont.

page 5 of 6

SPECIES: pumpkinseed
 AREA: ambient

	TAXA	65-10 F	68-11 F	78-18 M	65-12 M	70-12 M	65-10 F	65-10 M	65-8 F	67-10 M	65-10 F	65-10 M	65-10 F	65-10 M	TOTAL NO	MEAN NO	STD ERROR	REL ERR	
O. COERULINA																5	.4	.3	.2
O. CLAVICULATA (MAYHEW, 1916)	0	0	0	0	0	5	0	0	0	0	0	0	0	0	5	.4	.3	.2	
O. COTTONIFERA (BREWER, 1916)	244	0	0	0	0	400	0	0	350	225	300	200	0	1617	124.4	43.4	59.5		
O. DIPPERA (EXCERPT MICHIGAN) HYP-TERA FISH	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	.1	.1	0.0	
O. DIPPERA (HUGES) CHILODONIDAE LARVAE	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	.1	.1	0.0	
O. ETHEMOPTERA (MAYHEW)	4	35	88	0	12	27	0	34	3	9	13	63	46	331	25.5	7.5	12.2		
O. F. (OESTERLINE)	0	0	0	0	1	0	0	12	0	0	0	0	0	0	13	1.0	.9	.5	
O. GASTROPODA (SMITH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.1	.1	0.0	
O. FLANDRIOLAE																			
TOTAL NO OF ORGANISMS	248	620	100	0	103	429	0	49	354	237	315	157	49	2719	209.1	54.8			
TOTAL NO OF TAXA	2	4	4	0	4	3	0	3	3	3	3	3	2	2	279	209.1	54.8		
NUMBER OF DIFFERENT TAXA																			

TABLE H-3 cont.

page 6 of 6

SPECIES: pumpkinseed
 AREA: heated water

^H

TAXA	66-9 M	80-20 M	71-11 F	76-17 F	62-8 M	76-17 F	62-8 M	72-14 M	80-18 F	72-14 M	70-15 F	TOTAL NO.	MEAN	SD± ERR	RECT GOMF
P-HEMIATOMA (CHILOPODIA)	0	0	0	0	0	1	0	0	0	0	0	1	,1	,1	,2
O-COPEPODIA	0	0	0	0	0	11	1	0	0	1	0	13	,1,2	,1,0	,2,6
O-MECOPTERA (GEKAYESHI)	0	0	0	0	0	0	0	0	0	0	0	1	,1	,1	,2
O-CILIOPHORA (SYRINGEATIA)	0	0	0	0	0	1	0	0	0	0	0	1	,1	,1	,2
O-SO SYMPHYTIUMA	0	0	0	0	0	5	0	0	0	0	0	5	,5	,5	,0
O-BRACHIOPODA (BRACHIOPODS)	0	47	1	17	0	47	1	1	69	137	125	453	41,2	15,2	39,3
O-CILIOPHORAE LARVÆ	0	1	0	0	2	0	0	0	3	4	4	10	,9	,4	,5
O-CILIOPHORAE PUPÆ															
O-EPIHEMEROPTERA (HEMULES)	2	0	0	0	15	0	2	1	0	0	0	20	1,0	1,3	3,9
O-HYMENOPTERA (HYMEN)															
C-GASTROPODA (SNAILS)	0	1	0	0	0	0	0	0	0	0	0	1	,1	,1	,2
F-IPHYTHIA	0	0	0	0	0	0	0	2	0	0	0	2	,2	,2	,3
TOTAL NO OF ORGANISMS	2	49	1	17	23	4	4	69	141	129	507	46,1	15,3		
TOTAL NO OF TAXA	1	3	1	1	2	7	3	3	1	3	2	16			
SHANNON MEASURE INDEX															

APPENDIX I

TABLE NO.

I-1	Erickson Impingingement by Month, Sept, 75 - Sept, 76	11
I-2	Eckert Impingingement by Month, Sept, 75 - Sept, 76	141
I-3	Ottawa Impingingement by Month, Dec, 75 - May, 76	271

PAGE

TABLE I-1

Monthly summary of fish found impinged on the cooling-water intake screens at the Erickson Station from September, 1975, through September, 1976.

MONTH: September, 1975

SPECIES LIST	TOTAL NO	NO/ HR	FCT COMB BY NO WT	TOTAL WEIGHT (GM)	LENGTH (CM)			
					0-8	>8-16	>16-24	>24
NO FISH COLLECTED								
TOTALS	0	0.0		0.	0	0	0	0
WEIGHT/24 HOURS		0.0						
SAMPLING TIME (HOURS)		2.08						
NUMBER OF SPECIES COLLECTED	0							

TABLE I-1 cont.

page 2 of 13

MONTH: October, 1975

SPECIES LIST	TOTAL NO.	NO./ 24 HR	PER CENT COMP BY NO.	TOTAL WEIGHT (GM)	LENGTH (CM)			
					0-8	8-16	>16-24	>24
NO FISH COLLECTED								
TOTALS	0	0,0		0	0	0	0	0
WEIGHT/24 HOURS		0,0						
SAMPLING TIME (HOURS)		266,5						
NUMBER OF SPECIES COLLECTED	0							

TABLE I-1 cont.

page 3 of 13

MONTH: November, 1975

SPECIES LIST	TOTAL NO	NO/ 24 HRS	PCT COMP BY WT	TOTAL WEIGHT (GM)			
				0-8	>8-16	>16-24	>24
NO FISH COLLECTED							
TOTALS	0	0,0		0,	0	0	0
WEIGHT/24 HOURS		0,0					
SAMPLING TIME (HOURS)		207,3					
NUMBER OF SPECIES COLLECTED	0						

TABLE I-1 cont.

page 4 of 13

MONTH: December, 1975

SPECIES LIST	TOTAL NO	NO/ HR	FACT COMPL BY NO WT	TOTAL	LENGTH (CM)
				WEIGHT (GM)	
BLUEGILL	2	*1	100,0 100,0	2*	2 0 0 0
TOTALS	2	*1		2*	2 0 0 0
WEIGHT / 24 HOURS		*3			
SAMPLING TIME (HOURS)		574,0			
NUMBER OF SPECIES COLLECTED		1			

TABLE I-1 cont.

page 5 of 13

MONTH: January, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	CODE BY NO. (BT)	FCT				TOTAL WEIGHT (GM)	LENGTH (CM)
				<8	>8-16	>16-24	>24		
LARGEMOUTH BASS	1	<1	100,0	100,0	11,	1	0	0	0
TOTALS	1	≤1			11,	1	0	0	0
WEIGHT/24 HOURS									
SAMPLING TIME (HOURS)									
NUMBER OF SPECIES COLLECTED	723,3	1							

TABLE I-1 cont.

page 6 of 13

MONTH: February, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	PCT COMPL	TOTAL WEIGHT (GM)	LENGTH (CM)		
					0-8	>8-16	>16-24
NO FISH COLLECTED							
TOTALS	0	0,0	0	0	0	0	0
WEIGHT/24 HOURS	0,0						
SAMPLING TIME (HOURS)	579.3						
NUMBER OF SPECIES COLLECTED	0						

TABLE I-1 cont.

page 7 of 13

MONTH: March, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	FACT BY NO WT	TOTAL WEIGHT (GM)	LENGTH (CM)		
					0-8	>8-16	>16-24
GREEN SUNFISH	1	<1	50.0	82.6	1.9	0	0
BLACK CRAPPIE	1	<1	50.0	17.4	4.4	1	0
TOTALS	2	1		23.0	1	1	0
WEIGHT/24 HOURS							
SAMPLING TIME (HOURS)							
NUMBER OF SPECIES COLLECTED		2					

TABLE I-1 cont.

page 8 of 13

MONTH: April, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	PER		TOTAL WEIGHT (GM)	LENGTH (CM)			
			NO	WT		<8	>8-16	>16-24	>24
GREEN SUNFISH	1	<1	100.0	100.0	12.	1.	0	0	0
TOTALS	1	<1			12.	1.	0	0	0
WEIGHT/24 HOURS	^a 720.0								
SAMPLING TIME (HOURS)									
NUMBER OF SPECIES COLLECTED	1								

TABLE I-1 cont.

page 9 of 13

MONTH: May, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	COMB NO	FISH BY WT	TOTAL			LENGTH (CM)
					0-8	>8-16	>16-24	
<u>NO FISH COLLECTED</u>								
TOTALS	0	0,0			0,	0	0	0
WEIGHT/24 HOURS		0,0						
SAMPLING TIME (HOURS)		744,0						
NUMBER OF SPECIES COLLECTED	0							

TABLE I-1 cont.

page 10 of 13

MONTH: June, 1976

SPECIES LIST	TOTAL NO.	NO / 24 HR	PCT COMP BY NO WT	TOTAL	LENGTH (CM)		
				0-8	>8-16	>16-24	>24
NO FISH COLLECTED							
TOTALS	0	0,0		0*	0	0	0
WEIGHT / 24 HOURS	0,0						
SAMPLING TIME (HOURS)	720,0						
NUMBER OF SPECIES COLLECTED	0						

TABLE I-1 cont.

page 11 of 13

MONTH: July, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	FISH COMB NO	TOTAL WEIGHT (GM)	LENGTH (CM)			
					0-8	>8-16	>16-24	>24
NO FISH COLLECTED								
TOTALS	0	0,0	0	0	0	0	0	0
WEIGHT/24 HOURS		0,0						
SAMPLING TIME (HOURS)		744,0						
NUMBER OF SPECIES COLLECTED	0							

TABLE I-1 cont.

page 12 of 13

MONTH: August, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCY		TOTAL WEIGHT (GM)	LENGTH (CM)		
			COMP	BY		NO	WT	>24
BLUEGILL.	1	<1	100.0	100.0	6*	1	0	0
TOTALS	1	<1			6*	1	0	0
WEIGHT/24 HOURS			"2					
SAMPLING TIME (HOURS)			744.0					
NUMBER OF SPECIES COLLECTED			1					

TABLE I-1 cont.

page 13 of 13

MONTH: September, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	PER		TOTAL WEIGHT (GM)	LENGTH (CM)		
			COMPL BY NO	WT		0-8	>8-16	>16-24
PUMPKINSEED	1	.3	100.0	100.0	18.	1	0	0
TOTALS	1	.3			18.	1	0	0
WEIGHT/24 HOURS			6.1					
SAMPLING TIME (HOURS)			70.5					
NUMBER OF SPECIES COLLECTED		1						

TABLE I-2

Monthly summary of fish impinged on the cooling-water intake screens at the Eckert Station from September, 1975, through September, 1976.

MONTH: September, 1975

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCY		TOTAL WEIGHT (GM)	LENGTH (CM)			
			COMP NO	BY WT		0-8	>8-16	>16-24	>24
CARP	4	.2	2.0	3.9	34.	4	0	0	0
BLUNTNOSE MINNOW	80	4.0	39.0	39.7	344.	77	3	0	0
WHITE SUCKER	14	.7	6.8	10.3	82.	6	0	0	0
YELLOW BULLHEAD	7	.4	3.4	3.3	29.	2	0	0	0
BROWN BULLHEAD	1	.1	.5	.2	2.	1	0	0	0
CHANNEL CATFISH	15	.8	7.3	7.8	68.	13	2	0	0
BROOK SILVERSIDE	36	1.8	17.6	6.3	55.	36	0	0	0
PUMPKINSEED	1	.1	.5	1.4	12.	1	0	0	0
BLUEGILL	45	2.3	22.0	17.6	153.	45	0	0	0
BLACK CRAPPIE	2	.1	1.0	9.3	81.	1	0	0	0
TOTALS	205	10.3			867.	193	12	0	0
WEIGHT/24 HOURS			43.6						
SAMPLING TIME (HOURS)			477.0						
NUMBER OF SPECIES COLLECTED			10						

TABLE I-2 cont.

MONTH: October, 1975

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCT		TOTAL WEIGHT (GM)	LENGTH (CM)			
			COMF RY NO	WT		0-8	>8-16	>16-24	>24
SPOTTAIL SHINER	12	.6	23.1	22.7	42.	12	0	0	0
SAND SHINER	5	.2	9.6	8.6	16.	5	0	0	0
BLUNTNOSE MINNOW	2	.1	3.8	3.8	7.	2	0	0	0
YELLOW BULLHEAD	1	<.1	1.9	2.7	5.	1	0	0	0
CHANNEL CATFISH	8	.4	15.4	15.7	29.	7	1	0	0
BROOK SILVERSTEE	14	.5	21.2	14.9	22.	11	0	0	0
GREEN SUNFISH	1	<.1	1.9	4.9	9.	1	0	0	0
BLUEGILL	12	.6	23.1	29.7	55.	12	0	0	0
TOTALS	52	2.6			185.	51	1	0	0
WEIGHT/24 HOURS			9.1						
SAMPLING TIME (HOURS)			409.0						
NUMBER OF SPECIES COLLECTED			8						

TABLE I-2 cont.

MONTH: November, 1975

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCT COMP BY NO WT		TOTAL WEIGHT (GM)	LENGTH (CM)		
			<6	>6		<6-16	>16-24	>24
SPOTTAIL SHINER	45	1.5	43.7	36.8	158.	45	0	0
BLUNTNOSE MINNOW	2	.1	1.9	1.2	5.	2	0	0
YELLOW BULLHEAD	2	.1	1.9	3.7	1.6*	2	0	0
CHANNEL CATFISH	11	.4	10.7	15.2	65.	6	3	0
BROOK SILVERSIDE	26	.9	25.2	11.0	47.	26	0	0
GREEN SUNFISH	2	.1	1.9	1.2	5.	2	0	0
BLUEGILL	12	.4	11.7	10.3	44.	12	0	0
LARGEMOUTH BASS	1	<1	1.0	5.4	23.	0	1	0
WHITE CRAPPIE	1	<1	1.0	1.4	6.	1	0	0
BLACK CRAPPIE	1	<1	1.0	14.0	60.	0	1	0
TOTALS	103	3.5			429.	98	5	0
WEIGHT / 24 HOURS								
SAMPLING TIME (HOURS)								
NUMBER OF SPECIES COLLECTED								



TABLE I-2 cont.

MONTH: December, 1975

SPECIES LIST	TOTAL NO.	NO/ 24 HR	FCT COMF BY WT	TOTAL WEIGHT (GM)		>8-16 >16-24 >24	LENGTH (CM)
				<1	1-5		
CARP	1	<1	5	25.2	743.	0	0
SPOTTED SHINER	45	1.5	21.4	6.1	163.	44	1
ROSYFACE SHINER	1	<1	5	1	3.	1	0
BLUNTNOSE MINNOW	3	1	1.4	1	3.	0	0
YELLOW BULLHEAD	10	3	4.8	5.2	154.	3	0
BROWN BULLHEAD	9	3	4.3	1.6	47.	9	0
CHANNEL CATFISH	14	5	6.7	2.1	63.	12	0
BROOK SILVERSIDE	29	10	13.8	1.9	55.	29	0
GREEN SUNFISH	3	1	1.4	4	12.	3	0
PUMPKINSEED	1	<1	5	1	4.	1	0
BLUEGILL	74	2.5	35.2	20.7	615.	65	0
LARGEMOUTH BASS	3	1	1.4	7.6	227.	0	1
BLACK CRAPPIE	17	6	8.1	26.9	858.	9	0
TOTALS	210	7.1		2972.	184	23	2
WEIGHT/24 HOURS							
SAMPLING TIME (HOURS)							
NUMBER OF SPECIES COLLECTED							



TABLE I-2 cont.

MONTH: January, 1976



TABLE I-2 cont.

MONTH: February, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	PCT COMP BY WT	TOTAL WEIGHT (GM)	LENGTH (CM)			
					0-8	>8-16	>16-24	>24
NORTHERN PIKE	2	* 1	1.3	9.1	216*	0	0	2
CARP	2	* 1	1.3	42.2	1000*	0	1	0
GHOSTTAIL SHINER	8	* 4	5.1	1.1	25*	8	0	0
ROSYFACE SHINER	1	<.1	.6	0.0	1*	0	0	0
BLUNTNOSE MINNOW	2	* 1	1.3	* 2	6*	2	0	0
FATHEAD MINNOW	2	* 1	1.3	* 4	8*	2	0	0
WHITE SUCKER	1	<.1	.6	* 9	20*	0	0	0
BLACK BULLHEAD	1	<.1	.6	* 1	2*	1	0	0
YELLOW BULLHEAD	11	* 5	7.0	7.9	188*	10	0	1
BROWN BULLHEAD	1	<.1	.6	* 2	6*	1	0	0
CHANNEL CATFISH	30	1.4	19.1	6.6	157*	27	3	0
BROOK SILVERSIDE	21	1.0	13.4	1.6	33*	21	0	0
BROOK STICKLEBACK	9	* 4	5.7	* 6	14*	9	0	0
GREEN SUNFISH	7	* 3	4.5	1.3	30*	7	0	0
FLUKEKINGSEED	2	* 1	1.3	2.3	55*	0	2	0
BLUEGILL	31	1.5	19.7	4.7	110*	30	1	0
LARGEMOUTH BASS	14	* 7	8.9	9.2	217*	7	7	0
BLACK CRAPPIE	11	* 5	7.0	1.1.4	271*	9	2	0
LOGGERHEAD	1	<.1	.6	* 3	8*	1	0	0
TOTALS	157	7.4		2370*	136	17	3	1
WEIGHT/24 HOURS					112.2			
SAMPLING TIME (HOURS)					507.3			
NUMBER OF SPECIES COLLECTED					19			



TABLE I-2 cont.

MONTH: March, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	PCT COMF BY WT NO	TOTAL WEIGHT (GM)	LENGTH (CM)			
					0-8	>8-16	>16-24	>24
NORTHERN PIKE	2	.1	.4	12.8	805*	0	0	1
CARP	2	.1	.4	16.2	1144*	0	1	0
COMMON SHINER	1	<.1	.2	.1	4*	1	0	0
SPOTTAIL SHINER	25	1.0	5.4	1.6	97*	24	1	0
ROSYFACE SHINER	1	<.1	.2	0.0	2*	1	0	0
SPOTFIN SHINER	4	<.2	.9	.1	7*	4	0	0
SAND SHINER	2	<.1	.4	.1	4*	2	0	0
NORTHERN REDBELLY DACE	1	<.1	.2	0.0	1*	1	0	0
BLUNTNOSSE MINNOW	34	1.3	7.3	.8	52*	34	0	0
FATHEAD MINNOW	23	.9	4.9	.9	59*	23	0	0
WHITE SUCKER	24	.9	5.1	3.9	247*	12	0	0
GOLDEN REDMORSE	1	<.1	.2	0.0	3*	1	0	1
YELLOW BULLHEAD	13	.5	2.8	9.1	574*	9	2	1
BROWN BULLHEAD	4	<.2	.9	.4	28*	3	1	0
CHANNEL CATFISH	18	.7	3.9	1.4	68*	14	4	0
BANDED KILLIFISH	1	<.1	.2	.1	5*	1	0	0
BUCK STOOGESIDE	13	.5	2.8	.4	23*	13	0	0
BROOK STICKLEBACK	34	1.3	7.3	.8	47*	34	0	0
ROCK BASS	1	<.1	.2	1.8	112*	0	0	0
GREEN SUNFISH	12	.5	2.6	.2	15*	4	0	0
PUMPKINSEED	4	<.2	.9	1.0	64*	1	3	0
BLUEGILL	180	6.9	38.5	1.1	692*	175	55	0
LARGEMOUTH BASS	9	.3	1.9	5.1	322*	2	6	1
WHITE CRAPPIE	3	.1	.6	1.4	91*	1	2	0
BLACK CRAPPIE	50	1.9	10.7	27.5	1726*	13	35	2
YELLOW PERCH	2	.1	.4	.9	56*	0	2	0
LOGPERCH	3	.1	.6	.3	20*	2	1	0
TOTALS	467	17.9		6290.	375	76	55	11
WEIGHT/24 HOURS					241.7			
SAMPLING TIME (HOURS)					624.5			
NUMBER OF SPECIES COLLECTED					27			

TABLE I-2 cont.

MONTH: April, 1976

SPECIES LIST	TOTAL NO	NO / 24 HR	PCT NO	COMP BY WT	TOTAL WEIGHT (GM)		LENGTH (CM)		
					0-6	>6-16	>16-24	>24	
NORTHERN PIKE	1	<.1	.4	7.9	21.8	0	0	0	1
GOLDFISH	1	<.1	.4	1.2	34.	0	1	0	0
SPOTTAIL SHINER	22	.7	6.4	3.2	69.	16	4	0	0
BLUNTNOSE MINNOW	2	.1	.8	3	8.	2	0	0	0
FATHEAD MINNOW	3	.1	1.1	3	10.	3	0	0	0
WHITE SUCKER	1	<.1	.4	9.1	250.	0	0	0	1
GOLDEN REDHORSE	1	<.1	.4	1	2.	1	0	0	0
YELLOW BULLHEAD	4	.1	1.5	1.8	50.	1	3	0	0
BROWN BULLHEAD	1	<.1	.4	3	9.	0	1	0	0
CHANNEL CATFISH	13	.4	4.9	1.9	52.	6	7	0	0
BANDED KILLIFISH	2	.1	.6	3	9.	2	0	0	0
BROOK SILVERSIDE	6	.2	2.3	4	12.	4	2	0	0
BROOK STICKLEBACK	1	<.1	.4	0.0	1.	1	0	0	0
GREEN SUNFISH	7	.2	2.7	2.2	61.	5	2	0	0
PUMPKINSEED	51	1.6	19.4	27.4	756.	27	24	0	0
BLUEGILL	125	4.0	47.5	17.1	472.	11.4	11	0	0
WHITE CRAPPIE	3	.1	1.1	9	24.	1	2	0	0
BLACK CRAPPIE	18	.6	6.6	25.0	691.	2	12	3	1
LOGPERCH	1	<.1	.4	4	12.	0	1	0	0
TOTALS	263	9.4			2759.	167	70	3	3
WEIGHT / 24 HOURS									
SAMPLING TIME (HOURS)									
NUMBER OF SPECIES COLLECTED									

TABLE I-2 cont.

MONTH: May, 1976

SPECIES LIST	TOTAL NO./ 24 HR		PCT COMP BY NO/WT		TOTAL WEIGHT (GM)		LENGTH (CM)		
	NO	HR			0-8	>8-16	>16-24	>24	
SPOOTAIL SHINER	66	2.3	35.5	19.4	347.				
ROSYFACE SHINER	1	<1	.5	.2		4.			
BLUNTNOSE MINNOW	2	1	1.1	.7		12.			
FATHEAD MINNOW	11	4	5.9	2.1		37.			
WHITE SUCKER	4	1	2.2	2.2		164.			
GOLDEN REDHORSE	18	6	9.7	1.0		182.			
BLACK BULLHEAD	2	1	1.1	5.8		104.			
YELLOW BULLHEAD	6	2	3.2	7.7		138.			
BROWN BULLHEAD	3	1	1.6	4.3		77.			
CHANNEL CATFISH	7	2	3.8	3.6		64.			
BANDED KILLIFISH	1	<1	.5	.2		3.			
BROOK SILVERSIDE	1	<1	.5	.1		2.			
ROCK BASS	1	<1	.5	.7		155.			
GREEN SUNFISH	2	1	1.1	.7		13.			
PUMPKINSEED	2	1	1.1	1.2		21.			
BLUEGILL	33	11	17.7	13.8		247.			
BLACK CRAPPIE	26	9	1.4	0		215.			
TOTALS	186	64			1785.				
WEIGHT/24 HOURS					61.7				
SAMPLING TIME (HOURS)					694.0				
NUMBER OF SPECIES COLLECTED					17				

TABLE I-2 cont.

MONTH: June, 1976



WAPORA

TABLE I-2 cont.

MONTH: July, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCT COMP BY		TOTAL WEIGHT (GM)		LENGTH (CM)		
			NO	WT	0-8	>8-16	>16-24	>24	
NORTHERN PIKE	5	*2	9.6	9.7	64.	0	5	0	0
CARP	8	*3	15.4	49.0	322.	7	0	1	0
SPOTTED SHINER	2	*1	3.8	1.5	10.	2	0	0	0
BLINTNOSE MINNOW	10	*3	19.2	3.5	23.	10	0	0	0
FATHERHEAD MINNOW	4	*1	7.7	1.6	11.	4	0	0	0
SORTHEAD REDHORSE	1	*1	1.9	1.4	9.	1	0	0	0
BLACK BULLHEAD	2	*1	3.8	5.9	39.	1	1	0	0
YELLOW BULLHEAD	10	*3	19.2	1.6	109.	9	0	1	0
CHANNEL CATFISH	3	*1	5.8	4.3	28.	2	1	0	0
BROOK SILVERSIDE	1	*1	1.9	.6	4.	1	0	0	0
PUMPKINSEED	1	*1	1.9	2.1	14.	1	0	0	0
LARGEMOUTH BASS	1	*1	1.9	.2	1.	1	0	0	0
BLACK CRAPPIE	1	*1	5.8	2.4	0	1	0	0	0
JOHNNY WARTER	3	*1	5.8	.2	1.	3	0	0	0
TOTALS	52	1.7			658.	42	8	2	0
WEIGHT/24 HOURS									
SAMPLING TIME (HOURS)					21.9				
NUMBER OF SPECIES COLLECTED					720.0				
					14				

TABLE I-2 cont.

MONTH: August, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	FCT NO	COMP BY WT	TOTAL WEIGHT (GM)			LENGTH (CM)		
					0-8	8-16	>24	0-8	8-16	>24
NORTHERN PIKE	1	<1	3	3	23.2	26*	0	1	0	0
CARP	1	<1	3	3	4.1	5*	1	0	0	0
SPOOTAIL SHINER	1	<1	3	3	5.0	6*	1	0	0	0
SPOTTED SHINER	1	<1	3	3	3.3	4*	1	0	0	0
BLUNTNOSE MINNOW	14	5	53	53	36.5	44*	14	0	0	0
BLACK BULLHEAD	1	<1	3	3	7.5	9*	1	0	0	0
YELLOW BULLHEAD	2	1	7	7	10.0	12*	2	0	0	0
BROWN BULLHEAD	1	<1	3	3	5.8	7*	1	0	0	0
CHANNEL CATFISH	4	2	15	4	4.6	6*	4	0	0	0
TOTALS	26	1.0			124.6	25	1	0	0	0
WEIGHT/24 HOURS										
SAMPLING TIME (HOURS)					4.6					
NUMBER OF SPECIES COLLECTED					624.5					
					9					

TABLE I-2 cont.

MONTH: September, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	PCT COMP BY NO. WT	TOTAL WEIGHT (GM)		LENGTH (CM)		
				0-8	>8-16	>16-24	>24	
SPOTTAIL SHINER	2	*2	15, 4	24, 9	17,	2	0	0
SPOTFIN SHINER	2	*2	15, 4	12, 4	9,	2	0	0
FATHEAD MINNOW	2	*2	15, 4	3, 6	3,	2	0	0
CHANNEL CATFISH	6	*6	46, 2	35, 8	25,	6	0	0
SMALLMOUTH BASS	1	*1	7, 7	23, 4	16,	1	0	0
TOTALS	13	1, 3		69,	13	0	0	0
WEIGHT/24 HOURS				6, 9				
SAMPLING TIME (HOURS)				239, 0				
NUMBER OF SPECIES COLLECTED				5				

TABLE I-3 cont.

MONTH: January, 1976

SPECIES LIST	TOTAL NO	NO/ 24 HR	PCT		TOTAL		LENGTH (CM)		
			COMP EY NO	WT	(GM)	0-8	>8-16	>16-24	>24
ROSYFACE SHINER	3	1	4	.2	1.0	4*	3	0	0
SAND SHINER	2	1	2	.6	.5	2*	2	0	0
BLUENTNOSE MINNOW	19	7	26	.8	5.2	19*	0	0	0
YELLOW BULLHEAD	2	1	2	.8	1.8	9*	1	0	0
BROWN BULLHEAD	1	<1	1	.4	.6	2*	1	0	0
CHANNEL CATFISH	3	1	4	.2	3.2	12*	2	1	0
BROOK STICKERSH	2	1	2	.8	.8	3*	2	0	0
ROCK BASS	3	1	4	.2	1.2	5*	3	0	0
GREEN SUNFISH	5	2	7	0	20	6	4	1	0
BLUEGILL	30	1	4	2	3	46	6	28	2
GREEN X BLUEGILL	1	<1	1	.4	1.3	5*	1	0	0
TOTALS	71	26				362*	66	5	0
WEIGHT/24 HOURS									
SAMPLING TIME (HOURS)						13.4			
NUMBER OF SPECIES COLLECTED						650.0			
						1.1			

TABLE I-3 cont.

MONTH: February, 1976

page 3 of 6

SPECIES LIST	TOTAL NO.	NO/ 24 HR	FCT COMP BY		TOTAL WEIGHT (GM)		LENGTH (CM)		
			NO	WT	0-8	>8-16	>16-24	>24	
BLUNTNOSE MINNOW	10	•7	1.6	.7	5.9	23*	1.0	0	0
BROOK STICKLEBACK	4	•3	6	.7	1.4	5*	4	0	0
GREEN SUNFISH	2	•1	3	.3	30	1	1	0	0
BLUEGILL	39	2.8	65	.0	37	4	1.19*	1	0
LARGEMOUTH BASS	1	•1	1	.7	2	4	1.48*	38	1
BLUEGILL X PUMPKINSEED	2	•1	3	.3	22	1	1	0	0
BLACKSIDE DARTER	1	•1	1	.7	.5	2*	0	0	0
TOTALS	59	4.3			394.	55	4	0	0
WEIGHT/24 HOURS									
SAMPLING TIME (HOURS)					23.7				
NUMBER OF SPECIES COLLECTED					330.0				7



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TABLE I-3 cont.

MONTH: March, 1976

SPECIES LIST	TOTAL NO.	NO/ 24 HR	PER CENT COMP BY WT		TOTAL WEIGHT (GM)		LENGTH (CM)		
			NO	WT	0-8	>8-16	>16-24	>24	
BLUNTNOSE MINNOW	1	2	1.0	0	4.5	3	1	0	0
YELLOW BULLHEAD	1	2	1.0	0	2.3	2	1	0	0
BROOK SILVERSIDE	1	2	1.0	0	1.5	1	1	0	0
GREEN SUNFISH	2	4	20	0	23.2	1.6	2	0	0
BLUEGILL	5	11	50	0	68.5	47	4	1	0
TOTALS	10	22			69	9	1	0	0
WEIGHT/24 HOURS									
SAMPLING TIME (HOURS)					15.2				
NUMBER OF SPECIES COLLECTED					10.6	0			
					5				

TABLE I-3 cont.

MONTH: April, 1976

SPECIES LIST	TOTAL NO.	NO/ HR	FCT BY NO	TOTAL WEIGHT (GM)		LENGTH (CM)		
				WT	WT	0-6	>6-16	>16-24
YELLOW BULLHEAD	1	1	50.0	42.9	3.	1	0	0
BLUEGILL	1	1	50.0	57.1	4.	1	0	0
TOTALS	2	2	100.0	100.0	7.	2	0	0
WEIGHT/24 HOURS								
SAMPLING TIME (HOURS)				44.5	4			
NUMBER OF SPECIES COLLECTED				2				



TABLE I-3 cont.

MONTH: May, 1976

SPECIES LIST	TOTAL NO.	NO / 24 HR	PCT COMP BY NO/HY	TOTAL WEIGHT (GM)			LENGTH (CM)		
				0-8	>8-16	>16-24	>24		
NO FISH COLLECTED									
TOTALS	0	0	0	0	0	0	0	0	0
WEIGHT/24 HOURS				0.0					
SAMPLING TIME (HOURS)				291.0					
NUMBER OF SPECIES COLLECTED				0					



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APPENDIX J

TABLE NO.

PAGE

J-1	Erickson Entrainment by Date, 1975-1976	1J
J-2	Eckert Entrainment by Date, 1975-1976	4J
J-3	Ottawa Street Entrainment by Date, 1975-1976	7J

TABLE J-1

Summary of entrainment sampling at the Erickson Station, September, 1975 - August, 1976. The number of larval fish and fish eggs ($\times 10^{-3}$) per cubic meter of water sampled is presented for each sampling date. Blanks indicate a vacant sample. Data from single 24-hour pump samples from the surface and near bottom are combined for each date.

Taxon	Sampling Date												1 ($\times 10^{-3}$)					
	Sep 11	Oct 2	October 15	Nov 3	December 2	Jan 11	Feb 28	Mar 30	April 21	Feb 8	Mar 12	April 15		18	19	23	26	29
<u><i>Cyprinus carpio</i></u>																		
<u><i>Pimephales notatus</i></u>																		
Cyprinid sp.-B																		
Cyprinid sp.-E																		
Cyprinid sp.-H																		
<u><i>Catostomus commersoni</i></u>																		
<u><i>Catostomidae</i></u> F.																		
<u><i>Ictalurus natalis</i></u>																		
<u><i>Lepomis</i></u> spp.																		
<u><i>Micropterus dolomieu</i></u>																		
<u><i>Micropterus salmoides</i></u>																		
<u><i>Centrarchidae</i></u> F.																		
Centrarchid-like sp.-B																		
Centrarchid-like sp.-C																		
Centrarchid-like sp.-F																		
<u><i>Etheostoma nigrum</i></u>																		
<u><i>Percina caprodes</i></u>																		
<u><i>Percidae</i></u> (darter) A																		
<u><i>Percidae</i></u> sp.-A																		
Unidentifiable larvae																		
<u><i>Cyprinus carpio</i></u> eggs																		
Unidentifiable eggs																		
Total # - larvae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1
-eggs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE J-1 cont.

page 3 of 3



Taxon	Sampling Date						Range	Size Mean
	July 3	13	16	21	24	29		
<u><i>Cyprinus carpio</i></u>								
<u><i>Pimephales notatus</i></u>	20	5	27	61	44	52 ($\times 10^{-3}$)	6.0- 7.5	6.2
<u><i>Cyprinid sp.-B</i></u>							6.0- 6.5	6.2
<u><i>Cyprinid sp.-E</i></u>							4.5- 5.0	4.7
<u><i>Cyprinid sp.-H</i></u>							5.0- 6.0	5.4
<u><i>Catostomus commersoni</i></u>							3.5-15.0	6.0
<u><i>Catostomidae F.</i></u>							11.5	
<u><i>Ictalurus natalis</i></u>	10		13	5	1		6.0-23.0	10.0
<u><i>Lepomis</i> spp.</u>					9	2	14.4	
<u><i>Micropterus dolomieu</i></u>							7.5	
<u><i>Micropterus salmoides</i></u>							29.5-37.0	32.7
<u><i>Centrarchidae F.</i></u>							14.5-34.0	21.9
<u><i>Centrarchid-like sp.-B</i></u>							6.0	
<u><i>Centrarchid-like sp.-C</i></u>							4.5- 7.0	5.4
<u><i>Centrarchid-like sp.-F</i></u>							5.0- 5.5	5.2
<u><i>Etheostoma nigrum</i></u>							11.0	
<u><i>Percina caprodes</i></u>							7.0	
<u><i>Percidae (darter) A</i></u>							10.5	
<u><i>Percidae sp.-A</i></u>							11.5	
<u>Unidentifiable larvae</u>							8.0	
<u><i>Cyprinus carpio</i> eggs</u>							7.4	
<u>Unidentifiable eggs</u>								
Total # - larvae			30	5	40	67	54	0
- eggs			0	0	0	0	0	0

TABLE J-1 cont.

page 2 of 3

Taxon	Sampling Date														
	May					June									
	4	7	12	15	20	24	27	1	4	9	12	17	22	25	30
<i>Cyprinus carpio</i>															
<i>Pimephales notatus</i>								2 ($\times 10^{-3}$)							
<i>Cyprinid sp.-B</i>								18		11	38	27	21	6	4
<i>Cyprinid sp.-E</i>										4	2	1			
<i>Cyprinid sp.-H</i>										3	1				
<i>Catostomus commersoni</i>															
<i>Catostomidae F.</i>															
<i>Ictalurus natalis</i>															
<i>Lepomis</i> spp.															
<i>Micropterus dolomieu</i>															
<i>Micropterus salmoides</i>															
<i>Centrarchidae F.</i>															
<i>Centrarchid-like sp.-B</i>								1				4			
<i>Centrarchid-like sp.-C</i>												2	6		
<i>Centrarchid-like sp.-F</i>												2	3		
<i>Etheostoma nigrum</i>												1			
<i>Percina caprodes</i>												1			
<i>Percidae (darter) A</i>												2			
<i>Percidae sp.-A</i>												1			
Unidentifiable larvae															
<i>Cyprinus carpio</i> eggs												94			
Unidentifiable eggs												9			
Total # - larvae	0	3	1	0	22	8	0	19	54	153	133	84	15	46	17
- eggs	0	0	0	0	0	0	0	0	0	103	0	0	0	0	0



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TABLE J-2

Summary of entrainment sampling at the Eckert Station, September, 1975 - August, 1976. The number of larval fish and fish eggs ($\times 10^{-3}$) per cubic meter of water sampled is presented for each sampling date. Blanks indicate a vacant sample. Data from single 24-hour pump samples from the surface and near bottom are combined for each date.

Taxon	Sampling Date															
	Sep 11	Oct 1	Oct 15	Nov 3	December 2	Nov 11	Jan 31	Feb 18	Mar 18	April 7	11	14	17	22	25	28
<u><i>Cyprinus carpio</i></u>																
<u><i>Pimephales notatus</i></u>																
Cyprinid sp.-B																
Cyprinid sp.-E																
<u><i>Catostomus commersoni</i></u>																
<u><i>Ictalurus natalis</i></u>																
<u><i>Ictalurus punctatus</i></u>																
<u><i>Ambloplites rupestris</i></u>																
<u><i>Lepomis cyanellus</i></u>																
Centrarchid-like sp.-B																
Centrarchid-like sp.-C																
Centrarchid-like sp.-D																
Centrarchid-like sp.-E																
<u><i>Etheostoma nigrum</i></u>																
<u><i>Percina</i> spp.</u>																
Percidae (darter) A																
Percidae sp.-A																
Unidentifiable larvae																
<u><i>Cyprinus carpio</i> eggs</u>																
<u>Unidentifiable eggs</u>																
Total # - larvae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5
- eggs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE J-2 cont.

page 2 of 3

Taxon	Sampling Date														
	May 1	6	11	14	19	23	26	29	June 3	8	11	16	19	24	29
<i>Cyprinus carpio</i>									3	5	2	3			
<i>Pimephales notatus</i>					1 ($\times 10^{-3}$)	1	2	4	9	23	5	5	3	1	
<i>Cyprinid sp.-B</i>															
<i>Cyprinid sp.-E</i>									8	1					
<i>Catostomus commersoni</i>	1														
<i>Ictalurus natalis</i>															
<i>Ictalurus punctatus</i>	2	2	1			3	1								
<i>Ambloplites rupestris</i>									1						
<i>Lepomis cyanellus</i>						1									
<i>Centrarchid-like sp.-B</i>					2										
<i>Centrarchid-like sp.-C</i>					1				1						
<i>Centrarchid-like sp.-D</i>									1						
<i>Centrarchid-like sp.-E</i>															
<i>Etheostoma nigrum</i>												2			
<i>Percina</i> spp.															
<i>Percidae</i> (darter) A															
<i>Percidae</i> sp.-A															
Unidentifiable larvae															
<i>Cyprinus carpio</i> eggs									61	8					
Unidentifiable eggs															
Total # - larvae		0	3	6	2	16	4	6	25	13	29	8	9	8	4
- eggs		0	0	0	0	0	0	0	0	61	0	8	4	0	0

TABLE J-2 cont.

page 3 of 3

Taxon	Sampling Date						Size Range	Mean
	July 2 7	10	15	20	23	28		
<i>Cyprinus carpio</i>							5.5-11.5	7.3
<i>Pimephales notatus</i>	9	3	6		2	(x 10 ⁻³)	5.5- 6.5	5.9
Cyprinid sp.-B							5.0- 6.0	5.8
Cyprinid sp.-E								6.5
<i>Gasterosteus commersoni</i>							11.0-13.0	12.0
<i>Ictalurus natalis</i>	1						14.0-24.0	19.0
<i>Ictalurus punctatus</i>	2	1			16	5	13.0-23.5	15.3
<i>Ambloplites rupestris</i>								9.5
<i>Lepomis cyanellus</i>	1							15.0
Centrarchid-like sp.-B							5.0- 6.0	5.5
Centrarchid-like sp.-C								5.0
Centrarchid-like sp.-D							5.5- 6.0	5.6
Centrarchid-like sp.-E								6.0
<i>Etheostoma nigrum</i>							23.0-24.0	23.3
<i>Percina</i> spp.							5.5- 8.0	6.6
percidae (darter) A							6.0-11.0	8.1
Percidae sp.-A								6.0
Unidentifiable larvae								
<i>Cyprinus carpio</i> eggs								
Unidentifiable eggs								
Total # - larvae	13	4	6	0	0	18	5	0
- eggs	0	0	0	0	0	0	0	0



TABLE J-3

Summary of entrainment sampling at the Ottawa Street Station, September, 1975 - August, 1976. The number of larval fish and fish eggs ($\times 10^{-3}$) per cubic meter of water sampled is presented for each sampling date. Blanks indicate a vacant sample. Data from single 24-hour pump samples from the surface and near bottom are combined for each date.

Taxon	Sampling Dates															
	Sep 30	Oct 15	Nov 4	December 2	Jan 11	Feb 29	Mar 19	April 18	6	9	13	16	21	24	27	30
<u><i>Cyprinus carpio</i></u>													1 ($\times 10^{-3}$)			
<u><i>Pimephales notatus</i></u>																
<u><i>Catostomus commersoni</i></u>																
<u><i>Ictalurus melas</i></u>																
<u><i>Ictalurus natalis</i></u>																
<u><i>Lepomis</i> spp.</u>																
<u><i>Lepomis cyanellus</i></u>																
Centrarchid-like sp.-B																
Centrarchid-like sp.-C																
Percidae (darter) A																
Unidentifiable larvae																
Unidentifiable eggs																
Total # - larvae	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
- eggs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE J-3 cont.

page 2 of 3

Taxon	Sampling Dates													
	May			June										
	5	8	13	18	22	25	28	2	5	10	15	18	23	26
<u><i>Cyprinus carpio</i></u>							6 (x 10 ⁻³)							
<u><i>Pimephales notatus</i></u>							3	2	2	6				
<u><i>Castostomus commersoni</i></u>							1							
<u><i>Ictalurus melas</i></u>														
<u><i>Ictalurus natalis</i></u>								2		5	1			
<u><i>Lepomis cyanellus</i></u>										1				
Centrarchid-like sp.-B							2							
Centrarchid-like sp.-C							2							
Percidae (darter) A							6							
Unidentifiable larvae							1			3				
Unidentifiable eggs										1				
Total # - larvae	0	0	1	10	6	3	3	2	6	19	11	3	5	
- eggs	0	0	0	0	0	0	0	0	0	1	0	0	0	

TABLE J-3 cont.

page 3 of 3

Taxon	Sampling Dates						Range	Mean
	July 1 6	9	14	17	22	August 10 23		
<u><i>Cyprinus carpio</i></u>							4.0- 7.0	5.6
<u><i>Pimephales notatus</i></u>			1 ($\times 10^{-3}$)				5.0- 6.0	5.7
<u><i>Castostomus commersoni</i></u>								13.0
<u><i>Ictalurus melas</i></u>	2							31.0
<u><i>Ictalurus natalis</i></u>	1					17.0-27.0		20.3
<u><i>Lepomis</i> spp.</u>	1			2		5.0-17.5		10.1
<u><i>Lepomis cyanellus</i></u>				1				21.0
Centrarchid-like sp.-B								4.5
Centrarchid-like sp.-C								5.0
Percidae (darter) A								5.0
Unidentifiable larvae	4			1			6.0-13.	7.8
Unidentifiable eggs								
Total # - larvae	4	4	0	0	1	1	0	3
-eggs	0	0	0	0	0	0	0	0

